SEQUENCE LISTING

<110> Aventis Pharma SA

ARNOULD-REGUIGNE, Isabelle

PRADES, Catherine

ROSIER-MONTUS, Marie-Francoise

NAUDIN, Laurent

LEMOINE, Cendrine

DEAN, Michael

DENEFLE, Patrice

<120> NUCLEIC ACIDS OF THE HUMAN ABCA12 GENE, VECTORS CONTAINING SUCH NUCLEIC ACIDS, AND USES THEREOF

<130> 03806.0537

<150> US 60/267,715

<151> 2001-02-12

<160> 38

<170> PatentIn version 3.0

<210> 1

<211> 9112

<212> DNA

<213> Homo sapiens

<220>

<221> n

<222> (1)..(9112)

<223> n = a, t, g, or c

<400> 1
gaagagttga ttgagaagtg cctcttggtt aaggattaac cacagggaaa aatccagcag 60
aaacagaaga actgtgggtt tcttacccca gccctcaagg aagctatgcc gtgaaagggg 120
tactgataca ctgacataca gcaagttgga cggggcatca gttcttcatt tgtggagtgg 180
agaaaagaag aggaaatctc tcatttgggg catttgaagg atggcttccc tgtttcatca 240
gcttcagatc ctggtctgga aaaattggct aggtgtaaaa aggcagccgc tttggacact 300
tgtcttgatc ttatggccag tcattatttt cataattttg gctattactc ggaccaaatt 360
tcctccaact gcaaaaccaa cttgttacct cgcacctcga aaccttccta gtactggatt 420
ctttccattc ctgcagaccc tactctgtga cacagactct aaatgcaaag acacacccta 480
tggcccacaa gatctgcttc gtaggaaagg aattgatgat gcactattta aagacagtga 540
gattctgaga aagtcatcca acctggataa ggacagcagt ttatcattcc agagcaccca 600
agttccagaa agaaggcatg catcactagc cacagtattt cccagtccaa gttctgattt 660
ggaaatcccc ggaacatata ctttcaatgg cagtcaagtg ctcgcacgaa ttcttggctt 720
ggaaaagctg ttaaagcaaa attcaacttc agaagatata cgaagagaac tatgtgacag 780
ctattcagga tacattgtgg atgatgcctt ctcttggacc tttctaggaa gaaatgtttt 840
taacaaattt tgcctttcta acatgaccct tttagagtct tctctccaag aactaaacaa 900
acagttctcc cagctatcca gtgaccccaa caatcagaag atagtgtttc aggaaatagt 960
cagaatgctg tctttcttct cacaagtgca agagcagaaa gctgtgtggc agcttctgtc 1020
tagttttcca aatgtgtttc agaatgacac atcactaagc aatctatttg atgttcttcg 1080
aaaggcaaac agtgtgctgc tggttgtgca gaaggtttat ccacgttttg caactaacga 1140
aggtttcaga accctccaga agtctgttaa acatctgctg tacactctgg actccccagc 1200
tcaaggtgac tccgataata taacgcatgt gtggaatgag gatgatggac agaccttatc 1260
tccaagcagt ctggctgcac agctcctaat tctggaaaac tttgaagatg ccctcttaaa 1320
tatatcagca aatagtcctt atattcctta cttggcatgt gtgagaaatg tgactgacag 1380
tttggccaga ggttcaccag aaaatctaag actcctgcag tccacaatac gatttaaaaa 1440
atcttttctt cgcaatggtt cctatgaaga ttactttcct ccagttcctg aagtcctaaa 1500
atcaaaactg tctcaacttc gaaacttgac cgaacttctt tgtgaatctg aaactttcag 1560
tttgatagag aagtcatgcc agctctctga tatgagcttt gggagcctgt gtgaagaaag 1620
tgagtttgat ctgcaactcc tcgaagcggc agagctgggc accgaaatag cagccagctt 1680
actgtaccat gacaatgtca tatctaaaaa agtgagagat ttgctgactg gagatccaag 1740
caaaattaat ttaaatatgg atcagtttct agaacaggca ctgcaaatga attacttgga 1800
aaatatcact cagttaatac cgatcataga agccatgctg catgtcaata acagtgcaga 1860

tgcttctgaa aagccaggtc agttactaga aatgtttaaa aatgttgaag agctgaaaga 1920
agatttaagg agaacaacag gaatgtccaa caggactatt gacaagttgc tggccattcc 1980
catccctgat aatagagctg agattatttc tcaggtgttc tggctgcatt cctgtgatac 2040
taatatcacc actcccaaac tagaagatgc aatgaaagaa ttctgcaacc tgtctctttc 2100
agagagatcc cggcagtctt acctcatcgg actcaccctt ctgcactact taaacattta 2160
caacttcaca gacaaggtgt ttttcccgag gaaagatcaa aagccagtag aaaagatgat 2220
ggagctcttc ataagactaa aagagattct caatcagatg gcttctggca cacatccgct 2280
gctagacaaa atgagatccc tgaagcaaat gcatctgccc agaagtgttc cattaacaca 2340
ggcaatgtac agaagcaacc gaatgaacac accacaagga tcatttagca ccatctccca 2400
agcattatgt tctcaaggaa ttaccactga atatttaact gccatgctgc cctcttccca 2460
gaggccaaaa ggcaaccaca ccaaggattt tttgacttat aaattaacta aagagcaaat 2520
tgcttcaaaa tatggaattc ccataaatac cacaccattt tgcttctccc tttataaaga 2580
catcattaac atgcccgctg gacctgtgat ttgggctttc ttgaaaccta tgttgttggg 2640
aagaattttg catgcaccat ataacccagt cacaaaggca ataatggaaa agtccaatgt 2700
aactctgaga cagctggcgg aattaagaga aaaatctcaa gagtggatgg ataagtcgcc 2760
acttttcatg aattccttcc atctgttaaa ccaggcaatt ccaatgctcc agaatactct 2820
aaggaaccct tttgtgcaag tttttgtaaa gttctccgtg ggactcgatg ctgttgaact 2880
attgaaacag atagatgaac tcgatattct aagactgaaa ttagagaaca acattgacat 2940
catcgatcag cttaacacac tatcttccct gacagtaaat atttcctctt gtgtattata 3000
tgaccgtatt caggcagcaa aaaccataga tgaaatggag agagaggcta aaaggctcta 3060
caaaagcaac gaactctttg gaagtgttat ttttaagctt ccttctaaca gaagctggca 3120
cagaggctat gactctggaa atgtctttct tcctcctgtc ataaaatata ccatccggat 3180
gagtctcaag accgcacaga ccacaagaag cctaagaacc aagatttggg ctccagggcc 3240
acacaattct ccatcacaca accagatcta tggcagggct tttatttatt tacaggatag 3300
tattgaaaga gcaatcattg aattgcaaac tggaaggaac tcccaggaaa tagcagtcca 3360
ggttcaagca attccttatc cctgcttcat gaaagacaac ttcctaacca gtgtctctta 3420
ttctcttcca attgtgctta tggttgcctg ggttgtattt atagctgcct ttgtaaaaaa 3480
gcttgtctat gagaaagacc tccggcttca tgagtacatg aagatgatgg gtgtgaactc 3540
ctgcagccat ttctttgcct ggcttataga gagtgttgga tttttactgg ttaccatcgt 3600
gatcctcatc attatactca agtttggcaa tattcttcct aaaacaaatg ggttcatttt 3660
gttcctgtat ttttcggact acagcttctc ggttattgcc atgagctatc ttatcagtgt 3720
cttcttcaac aacaccaaca ttgcagctct gatcggaagc ctcatctaca tcattgcctt 3780

ctttccattt attgttctgg ttacagtgga gaatgagttg agctatgtat tgaaagtgtt 3840
catgagcctg ctgtccccaa cagcattcag ctatgcaagc caatacattg cacgatacga 3900
agaacagggc attggtcttc agtgggaaaa tatgtacacc tccccggttc aggatgacac 3960
cacctcattt ggctggctgt gctgtctaat cctagctgac tctttcattt atttccttat 4020
tgcttggtat gtcaggaatg tcttcccagg gacatacggt atggcagctc cctggtattt 4080
tccaattctt ccttcctatt ggaaggagcg atttgggtgt gcagaggtga agcctgagaa 4140
gagcaatggc ctcatgttta ctaacatcat gatgcagaac accaacccat ctgccagtcc 4200
tgaatacatg ttttcctcta acatcgagcc tgaacctaaa gatctcacag tcggggttgc 4260
cctgcatggg gtcacaaaga tctatggctc aaaagttgct gttgataacc tcaatctgaa 4320
cttttatgaa gggcatatta cttcattgct ggggcccaat ggagctggga aaactactac 4380
catttccatg ttaactgggc tgtttggggc ctcagcaggc accatttttg tatatggaaa 4440
agatatcaaa acagacctac acacggtacg gaagaacatg ggagtctgta tgcagcacga 4500
cgtcttgttc agttacctca ctactaagga gcaccttctc ctatatggtt ccatcaaagt 4560
tcctcactgg actaaaaagc agctccacga ggaagtaaaa aggactttaa aagatactgg 4620
actatatagc catcgtcata agagagttgg aacactgtca ggaggcatga agaggaagtt 4680
atctatatcc atagctctca ttggtggatc aagggtagta attttggatg aaccatctac 4740
tggagttgac ccatgttctc gccgaagtat atgggatgtt atatccaaga acaaaactgc 4800
cagaacaatc attctgtcaa cgcaccactt ggacgaggct gaagtgctga gtgaccgcat 4860
cgccttcctg gagcagggtg ggcttaggtg ctgtgggtcc ccattttacc tcaaggaagc 4920
ctttggcgat gggtatcacc tcacgcttac caagaagaag agtccaaatt taaatgcaaa 4980
tgcagtatgt gacaccatgg ccgtgacagc aatgatccaa tcacatctcc ccgaagccta 5040
cctcaaggag gatattgggg gagagcttgt ttatgtactt cctccattca gcaccaaagt 5100
ctcaggggcc tacctgtcac tcctacgggc actcgacaat ggcatgggtg acctcaacat 5160
cgggtgctac ggcatttcag ataccaccgt ggaggaggtc tttctgaact tgaccaaaga 5220
gtcacaaaaa aatagtgcta tgagtcttga gcacttaaca caaaagaaaa ttgggaattc 5280
caatgccaat ggcatctcaa ctcctgacga tttatctgtg agcagcagca atttcacaga 5340
cagagatgac aaaatcctga caagaggaga gaggctggat ggctttggac tgttgctgaa 5400
gaagatcatg gctatactca tcaagaggtt ccaccacacc cgcaggaact ggaaaggtct 5460
cattgctcag gttatcctcc ccatcgtctt tgttaccact gccatgggcc ttggcacact 5520
gagaaattcc agcaacagtt atccagagat tcagatctcc ccctctcttt atggtacctc 5580
cgaacagaca gccttctatg ctaattatca cccgagcacg gaagcacttg tctcagcaat 5640
gtgggacttc cctggaattg acaacatgtg tctgaacacc agtgatctac agtgtttaaa 5700

caaagacagt ctggaaaaat ggaacaccag tggagaaccc atcactaatt ttggtgtttg 5760
ctcctgctca gaaaatgtcc aggaatgtcc taaatttaac tattccccac cgcacagaag 5820
aacttactca tcccaggtaa tttataacct cactgggcaa cgagtggaaa attatcttat 5880
atcaactgca aatgagtttg tccaaaaaag atatggaggt tggagttttg ggctgccttt 5940
gacaaaagac cttcgttttg atataacagg agtccctgcc aatagaacac ttgccaaggt 6000
atggtatgat ccagaaggct atcactccct tccagcttac ctcaacagcc tgaataattt 6060
ccttctgcga gttaacatgt caaaatacga tgctgcccga catggcatca tcatgtatag 6120
ccatccttat ccaggagtgc aagaccaaga acaagccaca atcagcagtt taatcgatat 6180
tttagtggca ctgtctatct tgatgggcta ctctgtcacc accgccagct ttgtcaccta 6240
tgttgtaagg gaacatcaaa ccaaagccaa acagttgcag cacatttcag gcattggcgt 6300
gacatgctac tgggtaacaa acttcattta tgacatggtt ttctacttgg tgcctgtagc 6360
gttttcaatt ggtatcattg cgattttcaa attacctgca ttctacagtg aaaacaacct 6420
aggcgctgta tctctcctac ttctcctgtt tgggcatgca acattttcct ggatgtactt 6480
gctggctggg ctcttccatg aaacaggaat ggccttcatc acttacgtct gtgtcaactt 6540
gtttttggc attaattcca ttgtttccct gtcagtggta tactttcttt ccaaggaaaa 6600
gcctaatgat ccgactttag aacttatttc tgaaaccctc aagcgcattt tcctgatttt 6660
cccacaattc tgttttggct acggtttgat tgaactttct caacaacagt cggtcctaga 6720
cttcttaaaa gcatatggag tggaataccc aaatgaaacc tttgagatga ataaactagg 6780
tgcaatgttt gtggctttgg tttctcaggg caccatgttt ttttccttgc gactcttaat 6840
caacgaatcc ctgataaaga aactcaggct tttcttcaga aaatttaatt cttcacatgt 6900
aagggagaca atagatgagg atgaagatgt gcgggctgag agattaagag ttgagagtgg 6960
tgcagctgaa tttgacttgg tccaacttta ttgtctcaca aagacctacc aacttatcca 7020
caaaaagatt atagctgtaa acaacatcag catcgggata cctgctggag agtgttttgg 7080
gcttcttgga gtgaatggag caggaaagac cactatattc aagatgctga caggagacat 7140
cattccttca agtggaaaca ttctgatcag aaataagacc ggatctctgg gtcacgttga 7200
ttctcacagc tcattagttg gctactgtcc tcaggaagat gccttagatg acctggtaac 7260
tgtggaagaa catttgtatt tctatgccag ggtacatgga attccagaaa aggatattaa 7320
agaaactgtt cataaactcc ttaggagact tcacctgatg cccttcaagg acagagctac 7380
ctctatgtgc agttatggca caaaaagaaa attatccact gcactggcct tgatagggaa 7440
accttccatt ctactgctgg atgagccgag ctctggcatg gatccgaagt cgaaacggca 7500
cctctggaag atcatttcag aagaagtaca gaacaaatgt tccgtcatcc tcacatctca 7560
cagcatggaa gaatgtgaag ctctctgtac caggttggcc attatggtga atggaaagtt 7620

tcaatgtatt ggatctttgc agcacataaa gagcaggttt ggacgaggat ttactgtcaa 7680
agttcacttg aagaataaca aagtgaccat ggagaccctc acaaagttca tgcagctgca 7740
ctttccaaaa acatacttaa aagatcagca cctcagcatg ctagagtatc atgtaccagt 7800
cacagcagga ggagtcgcaa acatttttga tctgctggaa accaacaaga ctgctttaaa 7860
tattacaaat ttcttagtga gtcagaccac tctggaagag gttttcatca actttgccaa 7920
agaccagaag tcctatgaaa ctgctgatac cagcagccaa ggttccacta taagtgttga 7980
ctcacaagat gaccagatgg agtcttaaca cttccagcaa actcaatctc agcgtgtgac 8040
caatggcttc attttgaaga aaagccacag aagatacact tccgcaagat atcttcattt 8100
taaagtaaag taatatactg tatggaaagt tacaactgtg ttagactaac aagtaattat 8160
aaaaggaaat ttttccttct aaggtcagtg agtgttgttg ctactgaaat gaattcctgt 8220
atactcaaca ctgtgagcat gctaatgtat atgctggtga ttcttatgca aaggtgaagc 8280
cacctcaaga tgaatatctt aatttattac tttcaataaa aagacagttt aaaaggcatg 8340
gattttggta gttgaaatat aagagtggag aagaaaagtc agatggtttg tggcaggtgc 8400
caccgggcaa gcagacaaca taatttattt ccagaaaaca acagaatgaa catcatcatg 8460
aatacatgaa tcggctgtga tgtgtgaact gctaagggcc aaatgaacgt ttgnagagca 8520
gtgggcacaa tgtttacaat gtatgngtat gtcactttcg gtaccngtga atgcatgggg 8580
acgtgctgaa cccgaaaaaa agtgcctttc cataaggact gcaatagaga gggcaattta 8640
ccctggtggt acacggaacc tagattcact cctgccatnc cttgccaata gtaagctgca 8700
gggtggaaca agaaatcact tgctctgggg ggaagggagg ggggaatggg tgtgtcagct 8760
gggtagatac aaaccctgaa aagagaatcc atgtgctnct ggcaggcaac atttttaaa 8820
gctctttcag aaaccctcat atttggggtt tcttttcagg aaacattcct gtggagggaa 8880
aacgaatatg aagataattt tcagctaatt atctgggtga cccagaatcg tgtatatggc 8940
tataggatag acttcttaat aatggcaagt gacgtggccc tggggaaagg tgctttatgt 9000
accgtgtgtg cgtgtatgtg tgtgtatcta tacaagtttg tcagctttgg catgactgtt 9060
tgtctcgaaa accaataaac tcaaagttta gaaaaactca aaaaaaaaaa aa 9112

<210> 2

<211> 8875

<212> DNA

<213> Homo sapiens

<220>

<221> n

<222> (1)..(8875)

<223> n = a, t, g, or c

<400> 2

```
gaagagttga ttgagaagtg cctcttggtt aaggattaac cacagggaaa aatccagcag      60
aaacagaaga actgtgggtt tcttacccca gccctcaagg aagctatgcc gtgaaagggg     120
tactgataca ctgacataca gcaagttgga cggggcatca gttcttcatt tgtggagtgg     180
agaaaagaag aggaaatctc tcatttgggg catttgaagg atggcttccc tgtttcatca     240
gcttcagatc ctggtctgga aaaattggct aggtgtaaaa aggcagccgc tttggacact     300
tgtcttgatc ttatggccag tcattatttt cataattttg gctattactc ggaccaaatt     360
tcctccaact gcaaaaccaa cttgttacct cgcacctcga aaccttccta gtactggatt     420
ctttccattc ctgcagaccc tactctgtga cacagactct aaatgcaaag acacacccta     480
tggcccacaa gatctgcttc gtaggaaagg aattgatgat gcactattta aagacagtga     540
gattctgaga aagtcatcca acctggataa ggacagcagt ttatcattcc agagcaccca     600
agttccagaa agaaggcatg catcactagc cacagtattt cccagtccaa gttctgattt     660
ggaaatcccc ggaacatata ctttcaatgg cagtcaagtg ctcgcacgaa ttcttggctt     720
ggaaaagctg ttaaagcaaa attcaacttc agaagatata cgaagagaac tatgtgacag     780
ctattcagga tacattgtgg atgatgcctt ctcttggacc tttctaggaa gaaatgtttt     840
taacaaattt tgcctttcta acatgaccct tttagagtct tctctccaag aactaaacaa     900
acagttctcc cagctatcca gtgaccccaa caatcagaag atagtgtttc aggaaatagt     960
cagaatgctg tctttcttct cacaagtgca agagcagaaa gctgtgtggc agcttctgtc    1020
tagttttcca aatgtgtttc agaatgacac atcactaagc aatctatttg atgttcttcg    1080
aaaggcaaac agtgtgctgc tggttgtgca gaaggtttat ccacgttttg caactaacga    1140
aggtttcaga accctccaga agtctgttaa acatctgctg tacactctgg actccccagc    1200
tcaaggtgac tccgataata taacgcatgt gtggaatgag gatgatggac agaccttatc    1260
tccaagcagt ctggctgcac agctcctaat tctggaaaac tttgaagatg ccctcttaaa    1320
tatatcagca aatagtcctt atattcctta cttggcatgt gtgagaaatg tgactgacag    1380
tttggccaga ggttcaccag aaaatctaag actcctgcag tccacaatac gatttaaaaa    1440
atcttttctt cgcaatggtt cctatgaaga ttactttcct ccagttcctg aagtcctaaa    1500
atcaaaactg tctcaacttc gaaacttgac cgaacttctt tgtgaatctg aaactttcag    1560
tttgatagag aagtcatgcc agctctctga tatgagcttt gggagcctgt gtgaagaaag    1620
tgagtttgat ctgcaactcc tcgaagcggc agagctgggc accgaaatag cagccagctt    1680
```

actgtaccat gacaatgtca tatctaaaaa agtgagagat ttgctgactg gagatccaag 1740
caaaattaat ttaaatatgg atcagtttct agaacaggca ctgcaaatga attacttgga 1800
aaatatcact cagttaatac cgatcataga agccatgctg catgtcaata acagtgcaga 1860
tgcttctgaa aagccaggtc agttactaga aatgtttaaa aatgttgaag agctgaaaga 1920
agatttaagg agaacaacag gaatgtccaa caggactatt gacaagttgc tggccattcc 1980
catccctgat aatagagctg agattatttc tcaggtgttc tggctgcatt cctgtgatac 2040
taatatcacc actcccaaac tagaagatgc aatgaaagaa ttctgcaacc tgtctctttc 2100
agagagatcc cggcagtctt acctcatcgg actcaccctt ctgcactact taaacattta 2160
caacttcaca gacaaggtgt ttttcccgag gaaagatcaa aagccagtag aaaagatgat 2220
ggagctcttc ataagactaa aagagattct caatcagatg gcttctggca cacatccgct 2280
gctagacaaa atgagatccc tgaagcaaat gcatctgccc agaagtgttc cattaacaca 2340
ggcaatgtac agaagcaacc gaatgaacac accacaagga tcatttagca ccatctccca 2400
agcattatgt tctcaaggaa ttaccactga atatttaact gccatgctgc cctcttccca 2460
gaggccaaaa ggcaaccaca ccaaggattt tttgacttat aaattaacta aagagcaaat 2520
tgcttcaaaa tatggaattc ccataaatac cacaccattt tgcttctccc tttataaaga 2580
catcattaac atgcccgctg gacctgtgat ttgggctttc ttgaaaccta tgttgttggg 2640
aagaattttg catgcaccat ataacccagt cacaaaggca ataatggaaa agtccaatgt 2700
aactctgaga cagctggcgg aattaagaga aaaatctcaa gagtggatgg ataagtcgcc 2760
acttttcatg aattccttcc atctgttaaa ccaggcaatt ccaatgctcc agaatactct 2820
aaggaaccct tttgtgcaag tttttgtaaa gttctccgtg ggactcgatg ctgttgaact 2880
attgaaacag atagatgaac tcgatattct aagactgaaa ttagagaaca acattgacat 2940
catcgatcag cttaacacac tatcttccct gacagtaaat atttcctctt gtgtattata 3000
tgaccgtatt caggcagcaa aaaccataga tgaaatggag agagaggcta aaaggctcta 3060
caaaagcaac gaactctttg gaagtgttat ttttaagctt ccttctaaca gaagctggca 3120
cagaggctat gactctggaa atgtctttct tcctcctgtc ataaaatata ccatccggat 3180
gagtctcaag accgcacaga ccacaagaag cctaagaacc aagatttggg ctccagggcc 3240
acacaattct ccatcacaca accagatcta tggcagggct tttatttatt tacaggatag 3300
tattgaaaga gcaatcattg aattgcaaac tggaaggaac tcccaggaaa tagcagtcca 3360
ggttcaagca attccttatc cctgcttcat gaaagacaac ttcctaacca gtgtctctta 3420
ttctcttcca attgtgctta tggttgcctg ggttgtattt atagctgcct ttgtaaaaaa 3480
gcttgtctat gagaaagacc tccggcttca tgagtacatg aagatgatgg gtgtgaactc 3540
ctgcagccat ttctttgcct ggcttataga gagtgttgga tttttactgg ttaccatcgt 3600

gatcctcatc attatactca agtttggcaa tattcttcct aaaacaaatg ggttcatttt 3660
gttcctgtat ttttcggact acagcttctc ggttattgcc atgagctatc ttatcagtgt 3720
cttcttcaac aacaccaaca ttgcagctct gatcggaagc ctcatctaca tcattgcctt 3780
ctttccattt attgttctgg ttacagtgga gaatgagttg agctatgtat tgaaagtgtt 3840
catgagcctg ctgtccccaa cagcattcag ctatgcaagc caatacattg cacgatacga 3900
agaacagggc attggtcttc agtgggaaaa tatgtacacc tccccggttc aggatgacac 3960
cacctcattt ggctggctgt gctgtctaat cctagctgac tctttcattt atttccttat 4020
tgcttggtat gtcaggaatg tcttcccagg gacatacggt atggcagctc cctggtattt 4080
tccaattctt ccttcctatt ggaaggagcg atttgggtgt gcagaggtga agcctgagaa 4140
gagcaatggc ctcatgttta ctaacatcat gatgcagaac accaacccat ctgccagtcc 4200
tgaatacatg ttttcctcta acatcgagcc tgaacctaaa gatctcacag tcggggttgc 4260
cctgcatggg gtcacaaaga tctatggctc aaaagttgct gttgataacc tcaatctgaa 4320
cttttatgaa gggcatatta cttcattgct ggggcccaat ggagctggga aaactactac 4380
catttccatg ttaactgggc tgtttggggc ctcagcaggc accatttttg tatatggaaa 4440
agatatcaaa acagacctac acacggtacg gaagaacatg ggagtctgta tgcagcacga 4500
cgtcttgttc agttacctca ctactaagga gcaccttctc ctatatggtt ccatcaaagt 4560
tcctcactgg actaaaaagc agctccacga ggaagtaaaa aggactttaa aagatactgg 4620
actatatagc catcgtcata agagagttgg aacactgtca ggaggcatga agaggaagtt 4680
atctatatcc atagctctca ttggtggatc aagggtagta attttggatg aaccatctac 4740
tggagttgac ccatgttctc gccgaagtat atgggatgtt atatccaaga acaaaactgc 4800
cagaacaatc attctgtcaa cgcaccactt ggacgaggct gaagtgctga gtgaccgcat 4860
cgccttcctg gagcagggtg ggcttaggtg ctgtgggtcc ccattttacc tcaaggaagc 4920
ctttggcgat gggtatcacc tcacgcttac caagaagaag gtctttctga acttgaccaa 4980
agagtcacaa aaaaatagtg ctatgagtct tgagcactta acacaaaaga aaattgggaa 5040
ttccaatgcc aatggcatct caactcctga cgatttatct gtgagcagca gcaatttcac 5100
agacagagat gacaaaatcc tgacaagagg agagaggctg gatggctttg gactgttgct 5160
gaagaagatc atggctatac tcatcaagag gttccaccac gcccgcagga actggaaagg 5220
tctcattgct caggttatcc tccccatcgt ctttgttacc actgccatgg gccttggcac 5280
actgagaaat tccagcaaca gttatccaga gattcagatc tccccctctc tttatggtac 5340
ctccgnacag acagccttct atgctaatta tcacccgagc acggaagcac ttgtctcagc 5400
aatgtgggac ttccctggaa ttgacaacat gtgtctgaac accagtgatc tacagtgttt 5460
aaacaaagac agtctggaaa aatggaacac cagtggagaa cccatcacta attttggtgt 5520

ttgctcctgc tcagaaaatg tccaggaatg tcctaaattt aactattccc caccgcacag 5580
aagaacttac tcatcccagg taatttataa cctcactggg caacgagtgg aaaattatct 5640
tatatcaact gcaaatgagt ttgtccaaaa aagatatgga ggttggagtt ttgggctgcc 5700
tttgacaaaa gaccttcgtt ttgatataac aggagtccct gccaatagaa cacttgccaa 5760
ggtatggtat gatccagaag gctatcactc ccttccagct tacctcaaca gcctgaataa 5820
tttccttctg cgagttaaca tgtcaaaata cgatgctgcc cgacatggca tcatcatgta 5880
tagccatcct tatccaggag tgcaagacca agaacaagcc acaatcagca gtttaatcga 5940
tattttagtg gcactgtcta tcttgatggg ctactctgtc accaccgcca gctttgtcac 6000
ctatgttgta agggaacatc aaaccaaagc caaacagttg cagcacattt caggcattgg 6060
cgtgacatgc tactgggtaa caaacttcat ttatgacatg gttttctact tggtgcctgt 6120
agcgttttca attggtatca ttgcgatttt caaattacct gcattctaca gtgaaaacaa 6180
cctaggcgct gtatctctcc tacttctcct gtttgggcat gcaacatttt cctggatgta 6240
cttgctggct gggctcttcc atgaaacagg aatggccttc atcacttacg tctgtgtcaa 6300
cttgtttttt ggcattaatt ccattgtttc cctgtcagtg gtatactttc tttccaagga 6360
aaagcctaat gatccgactt tagaacttat ttctgaaacc ctcaagcgca ttttcctgat 6420
tttcccacaa ttctgttttg gctacggttt gattgaactt tctcaacaac agtcggtcct 6480
agacttctta aaagcatatg gagtggaata cccaaatgaa acctttgaga tgaataaact 6540
aggtgcaatg tttgtggctt tggtttctca gggcaccatg ttttttcct tgcgactctt 6600
aatcaacgaa tccctgataa agaaactcag gcttttcttc agaaaattta attcttcaca 6660
tgtaagggag acaatagatg aggatgaaga tgtgcgggct gagagattaa gagttgagag 6720
tggtgcagct gaatttgact tggtccaact ttattgtctc acaaagacct accaacttat 6780
ccacaaaaag attatagctg taaacaacat cagcatcggg atacctgctg gagagtgttt 6840
tgggcttctt ggagtgaatg gagcaggaaa gaccactata ttcaagatgc tgacaggaga 6900
catcattcct tcaagtggaa acattctgat cagaaataag accggatctc tgggtcacgt 6960
tgattctcac agctcattag ttggctactg tcctcaggaa gatgccttag atgacctggt 7020
aactgtggaa gaacatttgt atttctatgc cagggtacat ggaattccag aaaaggatat 7080
taaagaaact gttcataaac tccttaggag acttcacctg atgcccttca aggacagagc 7140
tacctctatg tgcagttatg gcacaaaaag aaaattatcc actgcactgg ccttgatagg 7200
gaaaccttcc attctactgc tggatgagcc gagctctggc atggatccga agtcgaaacg 7260
gcacctctgg aagatcattt cagaagaagt acagaacaaa tgttccgtca tcctcacatc 7320
tcacagcatg gaagaatgtg aagctctctg taccaggttg gccattatgg tgaatggaaa 7380
gtttcaatgt attggatctt tgcagcacat aaagagcagg tttggacgag gatttactgt 7440

caaagttcac ttgaagaata acaaagtgac catggagacc ctcacaaagt tcatgcagct 7500
gcactttcca aaaacatact taaaagatca gcacctcagc atgctagagt atcatgtacc 7560
agtcacagca ggaggagtcg caaacatttt tgatctgctg gaaaccaaca agactgcttt 7620
aaatattaca aatttcttag tgagtcagac cactctggaa gaggttttca tcaactttgc 7680
caaagaccag aagtcctatg aaactgctga taccagcagc caaggttcca ctataagtgt 7740
tgactcacaa gatgaccaga tggagtctta acacttccag caaactcaat ctcagcgtgt 7800
gaccaatggc ttcattttga agaaaagcca cagaagatac acttccgcaa gatatcttca 7860
ttttaaagta aagtaatata ctgtatggaa agttacaact gtgttagact aacaagtaat 7920
tataaaagga aatttttcct tctaaggtca gtgagtgttg ttgctactga aatgaattcc 7980
tgtatactca acactgtgag catgctaatg tatatgctgg tgattcttat gcaaaggtga 8040
agccacctca agatgaatat cttaatttat tactttcaat aaaaagacag tttaaaaggc 8100
atggattttg gtagttgaaa tataagagtg gagaagaaaa gtcagatggt ttgtggcagg 8160
tgccaccggg caagcagaca acataattta tttccagaaa acaacagaat gaacatcatc 8220
atgaatacat gaatcggctg tgatgtgtga actgctaagg gccaaatgaa cgtttgnaga 8280
gcagtgggca caatgtttac aatgtatgng tatgtcactt tcggtaccng tgaatgcatg 8340
gggacgtgct gaacccgaaa aaaagtgcct ttccataagg actgcaatag agagggcaat 8400
ttaccctggt ggtacacgga acctagattc actcctgcca tnccttgcca atagtaagct 8460
gcagggtgga acaagaaatc acttgctctg gggggaaggg agggggggaat gggtgtgtca 8520
gctgggtaga tacaaaccct gaaaagagaa tccatgtgct nctggcaggc aacatttttt 8580
aaagctcttt cagaaaccct catatttggg gtttcttttc aggaaacatt cctgtggagg 8640
gaaaacgaat atgaagataa ttttcagcta attatctggg tgacccagaa tcgtgtatat 8700
ggctatagga tagacttctt aataatggca agtgacgtgg ccctggggaa aggtgcttta 8760
tgtaccgtgt gtgcgtgtat gtgtgtgtat ctatacaagt ttgtcagctt tggcatgact 8820
gtttgtctcg aaaaccaata aactcaaagt ttagaaaaac tcaaaaaaaa aaaaa 8875

<210> 3
<211> 8350
<212> DNA
<213> Homo sapiens

<400> 3
gaagagttga ttgagaagtg cctcttggtt aaggattaac cacagggaaa aatccagcag 60
aaacagaaga actgtgggtt tcttacccca gccctcaagg aagctatgcc gtgaaagggg 120

tactgataca ctgacataca gcaagttgga cggggcatca gttcttcatt tgtggagtgg 180
agaaaagaag aggaaatctc tcatttgggg catttgaagg atggcttccc tgtttcatca 240
gcttcagatc ctggtctgga aaaattggct aggtgtaaaa aggcagccgc tttggacact 300
tgtcttgatc ttatggccag tcattatttt cataattttg gctattactc ggaccaaatt 360
tcctccaact gcaaaaccaa cttgttacct cgcacctcga aaccttccta gtactggatt 420
ctttccattc ctgcagaccc tactctgtga cacagactct aaatgcaaag acacacccta 480
tggcccacaa gatctgcttc gtaggaaagg aattgatgat gcactattta aagacagtga 540
gattctgaga aagtcatcca acctggataa ggacagcagt ttatcattcc agagcaccca 600
agttccagaa agaaggcatg catcactagc cacagtattt cccagtccaa gttctgattt 660
ggaaatcccc ggaacatata ctttcaatgg cagtcaagtg ctcgcacgaa ttcttggctt 720
ggaaaagctg ttaaagcaaa attcaacttc agaagatata cgaagagaac tatgtgacag 780
ctattcagga tacattgtgg atgatgcctt ctcttggacc tttctaggaa gaaatgtttt 840
taacaaattt tgcctttcta acatgaccct tttagagtct tctctccaag aactaaacaa 900
acagttctcc cagctatcca gtgaccccaa caatcagaag atagtgtttc aggaaatagt 960
cagaatgctg tctttcttct cacaagtgca agagcagaaa gctgtgtggc agcttctgtc 1020
tagttttcca aatgtgtttc agaatgacac atcactaagc aatctatttg atgttcttcg 1080
aaaggcaaac agtgtgctgc tggttgtgca gaaggtttat ccacgttttg caactaacga 1140
aggtttcaga accctccaga agtctgttaa acatctgctg tacactctgg actccccagc 1200
tcaaggtgac tccgataata taacgcatgt gtggaatgag gatgatggac agaccttatc 1260
tccaagcagt ctggctgcac agctcctaat tctggaaaac tttgaagatg ccctcttaaa 1320
tatatcagca aatagtcctt atattcctta cttggcatgt gtgagaaatg tgactgacag 1380
tttggccaga ggttcaccag aaaatctaag actcctgcag tccacaatac gatttaaaaa 1440
atcttttctt cgcaatggtt cctatgaaga ttactttcct ccagttcctg aagtcctaaa 1500
atcaaaactg tctcaacttc gaaacttgac cgaacttctt tgtgaatctg aaactttcag 1560
tttgatagag aagtcatgcc agctctctga tatgagcttt gggagcctgt gtgaagaaag 1620
tgagtttgat ctgcaactcc tcgaagcggc agagctgggc accgaaatag cagccagctt 1680
actgtaccat gacaatgtca tatctaaaaa agtgagagat ttgctgactg gagatccaag 1740
caaaattaat ttaaatatgg atcagtttct agaacaggca ctgcaaatga attacttgga 1800
aaatatcact cagttaatac cgatcataga agccatgctg catgtcaata acagtgcaga 1860
tgcttctgaa aagccaggtc agttactaga aatgtttaaa aatgttgaag agctgaaaga 1920
agatttaagg agaacaacag gaatgtccaa caggactatt gacaagttgc tggccattcc 1980
catccctgat aatagagctg agattatttc tcaggtgttc tggctgcatt cctgtgatac 2040

taatatcacc actcccaaac tagaagatgc aatgaaagaa ttctgcaacc tgtctctttc 2100
agagagatcc cggcagtctt acctcatcgg actcaccctt ctgcactact taaacattta 2160
caacttcaca gacaaggtgt ttttcccgag gaaagatcaa aagccagtag aaaagatgat 2220
ggagctcttc ataagactaa aagagattct caatcagatg gcttctggca cacatccgct 2280
gctagacaaa atgagatccc tgaagcaaat gcatctgccc agaagtgttc cattaacaca 2340
ggcaatgtac agaagcaacc gaatgaacac accacaagga tcatttagca ccatctccca 2400
agcattatgt tctcaaggaa ttaccactga atatttaact gccatgctgc cctcttccca 2460
gaggccaaaa ggcaaccaca ccaaggattt tttgacttat aaattaacta aagagcaaat 2520
tgcttcaaaa tatggaattc ccataaatac cacaccattt tgcttctccc tttataaaga 2580
catcattaac atgcccgctg gacctgtgat ttgggctttc ttgaaaccta tgttgttggg 2640
aagaattttg catgcaccat ataacccagt cacaaaggca ataatggaaa agtccaatgt 2700
aactctgaga cagctggcgg aattaagaga aaaatctcaa gagtggatgg ataagtcgcc 2760
acttttcatg aattccttcc atctgttaaa ccaggcaatt ccaatgctcc agaatactct 2820
aaggaaccct tttgtgcaag tttttgtaaa gttctccgtg ggactcgatg ctgttgaact 2880
attgaaacag atagatgaac tcgatattct aagactgaaa ttagagaaca acattgacat 2940
catcgatcag cttaacacac tatcttccct gacagtaaat atttcctctt gtgtattata 3000
tgaccgtatt caggcagcaa aaaccataga tgaaatggag agagaggcta aaaggctcta 3060
caaaagcaac gaactctttg gaagtgttat ttttaagctt ccttctaaca gaagctggca 3120
cagaggctat gactctggaa atgtctttct tcctcctgtc ataaaatata ccatccggat 3180
gagtctcaag accgcacaga ccacaagaag cctaagaacc aagatttggg ctccagggcc 3240
acacaattct ccatcacaca accagatcta tggcagggct tttatttatt tacaggatag 3300
tattgaaaga gcaatcattg aattgcaaac tggaaggaac tcccaggaaa tagcagtcca 3360
ggttcaagca attccttatc cctgcttcat gaaagacaac ttcctaacca gtgtctctta 3420
ttctcttcca attgtgctta tggttgcctg ggttgtattt atagctgcct ttgtaaaaaa 3480
gcttgtctat gagaaagacc tccggcttca tgagtacatg aagatgatgg gtgtgaactc 3540
ctgcagccat ttctttgcct ggcttataga gagtgttgga tttttactgg ttaccatcgt 3600
gatcctcatc attatactca agtttggcaa tattcttcct aaaacaaatg ggttcatttt 3660
gttcctgtat ttttcggact acagcttctc ggttattgcc atgagctatc ttatcagtgt 3720
cttcttcaac aacaccaaca ttgcagctct gatcggaagc ctcatctaca tcattgcctt 3780
ctttccattt attgttctgg ttacagtgga gaatgagttg agctatgtat tgaaagtgtt 3840
catgagcctg ctgtccccaa cagcattcag ctatgcaagc caatacattg cacgatacga 3900
agaacagggc attggtcttc agtgggaaaa tatgtacacc tccccggttc aggatgacac 3960

cacctcattt ggctggctgt gctgtctaat cctagctgac tctttcattt atttccttat 4020
tgcttggtat gtcaggaatg tcttcccagg gacatacggt atggcagctc cctggtattt 4080
tccaattctt ccttcctatt ggaaggagcg atttgggtgt gcagaggtga agcctgagaa 4140
gagcaatggc ctcatgttta ctaacatcat gatgcagaac accaacccat ctgccagtcc 4200
tgaatacatg ttttcctcta acatcgagcc tgaacctaaa gatctcacag tcggggttgc 4260
cctgcatggg gtcacaaaga tctatggctc aaaagttgct gttgataacc tcaatctgaa 4320
cttttatgaa gggcatatta cttcattgct ggggcccaat ggagctggga aaactactac 4380
catttccatg ttaactgggc tgtttggggc ctcagcaggc accatttttg tatatggaaa 4440
agatatcaaa acagacctac acacggtacg gaagaacatg ggagtctgta tgcagcacga 4500
cgtcttgttc agttacctca ctactaagga gcaccttctc ctatatggtt ccatcaaagt 4560
tcctcactgg actaaaaagc agctccacga ggaagtaaaa aggactttaa aagatactgg 4620
actatatagc catcgtcata agagagttgg aacactgtca ggaggcatga agaggaagtt 4680
atctatatcc atagctctca ttggtggatc aagggtagta attttggatg aaccatctac 4740
tggagttgac ccatgttctc gccgaagtat atgggatgtt atatccaaga acaaaactgc 4800
cagaacaatc attctgtcaa cgcaccactt ggacgaggct gaagtgctga gtgaccgcat 4860
cgccttcctg gagcagggtg ggcttaggtg ctgtgggtcc ccattttacc tcaaggaagc 4920
ctttggcgat gggtatcacc tcacgcttac caagaagaag agtccaaatt taaatgcaaa 4980
tgcagtatgt gacaccatgg ccgtgacagc aatgatccaa tcacatctcc ccgaagccta 5040
cctcaaggag gatattgggg gagagcttgt ttatgtactt cctccattca gcaccaaagt 5100
ctcaggggcc tacctgtcac tcctacgggc actcgacaat ggcatgggtg acctcaacat 5160
cgggtgctac ggcatttcag ataccaccgt ggaggaggtc tttctgaact tgaccaaaga 5220
gtcacaaaaa aatagtgcta tgagtcttga gcacttaaca caaaagaaaa ttgggaattc 5280
caatgccaat ggcatctcaa ctcctgacga tttatctgtg agcagcagca atttcacaga 5340
cagagatgac aaaatcctga caagaggaga gaggctggat ggctttggac tgttgctgaa 5400
gaagatcatg gctatactca tcaagaggtt ccaccacrcc cgcaggaact ggaaaggtct 5460
cattgctcag gttatcctcc ccatcgtctt tgttaccact gccatgggcc ttggcacact 5520
gagaaattcc agcaacagtt atccagagat tcagatctcc ccctctcttt atggtacctc 5580
cgaacagaca gccttctatg ctaattatca cccgagcacg gaagcacttg tctcagcaat 5640
gtgggacttc cctggaattg acaacatgtg tctgaacacc agtgatctac agtgtttaaa 5700
caaagacagt ctggaaaaat ggaacaccag tggagaaccc atcactaatt ttggtgtttg 5760
ctcctgctca gaaaatgtcc aggaatgtcc taaatttaac tattccccac cgcacagaag 5820
aacttactca tcccaggtaa tttataacct cactgggcaa cgagtggaaa attatcttat 5880

atcaactgca aatgagtttg tccaaaaaag atatggaggt tggagttttg ggctgccttt 5940
gacaaaagac cttcgttttg atataacagg agtccctgcc aatagaacac ttgccaaggt 6000
atggtatgat ccagaaggct atcactccct tccagcttac ctcaacagcc tgaataattt 6060
ccttctgcga gttaacatgt caaaatacga tgctgcccga catggcatca tcatgtatag 6120
ccatccttat ccaggagtgc aagaccaaga acaagccaca atcagcagtt taatcgatat 6180
tttagtggca ctgtctatct tgatgggcta ctctgtcacc accgccagct ttgtcaccta 6240
tgttgtaagg gaacatcaaa ccaaagccaa acagttgcag cacatttcag gcattggcgt 6300
gacatgctac tgggtaacaa acttcattta tgacatggtt ttctacttgg tgcctgtagc 6360
gttttcaatt ggtatcattg cgattttcaa attacctgca ttctacagtg aaaacaacct 6420
aggcgctgta tctctcctac ttctcctgtt tgggcatgca acattttcct ggatgtactt 6480
gctggctggg ctcttccatg aaacaggaat ggccttcatc acttacgtct gtgtcaactt 6540
gtttttggc attaattcca ttgtttccct gtcagtggta tactttcttt ccaaggaaaa 6600
gcctaatgat ccgactttag aacttatttc tgaaaccctc aagcgcattt tcctgatttt 6660
cccacaattc tgttttggct acggtttgat tgaactttct caacaacagt cggtcctaga 6720
cttcttaaaa gcatatggag tggaataccc aaatgaaacc tttgagatga ataaactagg 6780
tgcaatgttt gtggctttgg tttctcaggg caccatgttt ttttccttgc gactcttaat 6840
caacgaatcc ctgataaaga aactcaggct tttcttcaga aaatttaatt cttcacatgt 6900
aagggagaca atagatgagg atgaagatgt gcgggctgag agattaagag ttgagagtgg 6960
tgcagctgaa tttgacttgg tccaacttta ttgtctcaca aagacctacc aacttatcca 7020
caaaaagatt atagctgtaa acaacatcag catcgggata cctgctggag agtgttttgg 7080
gcttcttgga gtgaatggag caggaaagac cactatattc aagatgctga caggagacat 7140
cattccttca agtggaaaca ttctgatcag aaataagacc ggatctctgg gtcacgttga 7200
ttctcacagc tcattagttg gctactgtcc tcaggaagat gccttagatg acctggtaac 7260
tgtggaagaa catttgtatt tctatgccag ggtacatgga attccagaaa aggatattaa 7320
agaaactgtt cataaactcc ttaggagact tcacctgatg cccttcaagg acagagctac 7380
ctctatgtgc agttatggca caaaaagaaa attatccact gcactggcct tgatagggaa 7440
accttccatt ctactgctgg atgagccgag ctctggcatg gatccgaagt cgaaacggca 7500
cctctggaag atcatttcag aagaagtaca gaacaaatgt tccgtcatcc tcacatctca 7560
cagcatggaa gaatgtgaag ctctctgtac caggttggcc attatggtga atggaaagtt 7620
tcaatgtatt ggatctttgc agcacataaa gagcaggttt ggacgaggat ttactgtcaa 7680
agttcacttg aagaataaca aagtgaccat ggagaccctc acaaagttca tgcagctgca 7740
ctttccaaaa acatacttaa aagatcagca cctcagcatg ctagagtatc atgtaccagt 7800

cacagcagga ggagtcgcaa acatttttga tctgctggaa accaacaaga ctgctttaaa 7860

tattacaaat ttcttagtga gtcagaccac tctggaagag gttttcatca actttgccaa 7920

agaccagaag tcctatgaaa ctgctgatac cagcagccaa ggttccacta taagtgttga 7980

ctcacaagat gaccagatgg agtcttaaca cttccagcaa actcaatctc agcgtgtgac 8040

caatggcttc attttgaaga aaagccacag aagatacact tccgcaagat atcttcattt 8100

taaagtaaag taatatactg tatggaaagt tacaactgtg ttagactaac aagtaattat 8160

aaaaggaaat ttttccttct aaggtcagtg agtgttgttg ctactgaaat gaattcctgt 8220

atactcaaca ctgtgagcat gctaatgtat atgctggtga ttcttatgca aaggtgaagc 8280

cacctcaaga tgaatatctt aatttattac tttcaataaa aagacagttt aaaaggcaaa 8340

aaaaaaaaaa 8350

<210> 4

<211> 8113

<212> DNA

<213> Homo sapiens

<400> 4

gaagagttga ttgagaagtg cctcttggtt aaggattaac cacagggaaa aatccagcag 60

aaacagaaga actgtgggtt tcttacccca gccctcaagg aagctatgcc gtgaaagggg 120

tactgataca ctgacataca gcaagttgga cggggcatca gttcttcatt tgtggagtgg 180

agaaaagaag aggaaatctc tcatttgggg catttgaagg atggcttccc tgtttcatca 240

gcttcagatc ctggtctgga aaaattggct aggtgtaaaa aggcagccgc tttggacact 300

tgtcttgatc ttatggccag tcattatttt cataattttg gctattactc ggaccaaatt 360

tcctccaact gcaaaaccaa cttgttacct cgcacctcga aaccttccta gtactggatt 420

ctttccattc ctgcagaccc tactctgtga cacagactct aaatgcaaag acacacccta 480

tggcccacaa gatctgcttc gtaggaaagg aattgatgat gcactattta aagacagtga 540

gattctgaga aagtcatcca acctggataa ggacagcagt ttatcattcc agagcaccca 600

agttccagaa agaaggcatg catcactagc cacagtattt cccagtccaa gttctgattt 660

ggaaatcccc ggaacatata ctttcaatgg cagtcaagtg ctcgcacgaa ttcttggctt 720

ggaaaagctg ttaaagcaaa attcaacttc agaagatata cgaagagaac tatgtgacag 780

ctattcagga tacattgtgg atgatgcctt ctcttggacc tttctaggaa gaaatgtttt 840

taacaaattt tgcctttcta acatgaccct tttagagtct tctctccaag aactaaacaa 900

acagttctcc cagctatcca gtgaccccaa caatcagaag atagtgtttc aggaaatagt 960

cagaatgctg tctttcttct cacaagtgca agagcagaaa gctgtgtggc agcttctgtc 1020
tagttttcca aatgtgtttc agaatgacac atcactaagc aatctatttg atgttcttcg 1080
aaaggcaaac agtgtgctgc tggttgtgca gaaggtttat ccacgttttg caactaacga 1140
aggtttcaga accctccaga agtctgttaa acatctgctg tacactctgg actccccagc 1200
tcaaggtgac tccgataata taacgcatgt gtggaatgag gatgatggac agaccttatc 1260
tccaagcagt ctggctgcac agctcctaat tctggaaaac tttgaagatg ccctcttaaa 1320
tatatcagca aatagtcctt atattcctta cttggcatgt gtgagaaatg tgactgacag 1380
tttggccaga ggttcaccag aaaatctaag actcctgcag tccacaatac gatttaaaaa 1440
atcttttctt cgcaatggtt cctatgaaga ttactttcct ccagttcctg aagtcctaaa 1500
atcaaaactg tctcaacttc gaaacttgac cgaacttctt tgtgaatctg aaactttcag 1560
tttgatagag aagtcatgcc agctctctga tatgagcttt gggagcctgt gtgaagaaag 1620
tgagtttgat ctgcaactcc tcgaagcggc agagctgggc accgaaatag cagccagctt 1680
actgtaccat gacaatgtca tatctaaaaa agtgagagat ttgctgactg gagatccaag 1740
caaaattaat ttaaatatgg atcagtttct agaacaggca ctgcaaatga attacttgga 1800
aaatatcact cagttaatac cgatcataga agccatgctg catgtcaata acagtgcaga 1860
tgcttctgaa aagccaggtc agttactaga aatgtttaaa aatgttgaag agctgaaaga 1920
agatttaagg agaacaacag gaatgtccaa caggactatt gacaagttgc tggccattcc 1980
catccctgat aatagagctg agattatttc tcaggtgttc tggctgcatt cctgtgatac 2040
taatatcacc actcccaaac tagaagatgc aatgaaagaa ttctgcaacc tgtctctttc 2100
agagagatcc cggcagtctt acctcatcgg actcaccctt ctgcactact taaacattta 2160
caacttcaca gacaaggtgt ttttcccgag gaaagatcaa aagccagtag aaaagatgat 2220
ggagctcttc ataagactaa aagagattct caatcagatg gcttctggca cacatccgct 2280
gctagacaaa atgagatccc tgaagcaaat gcatctgccc agaagtgttc cattaacaca 2340
ggcaatgtac agaagcaacc gaatgaacac accacaagga tcatttagca ccatctccca 2400
agcattatgt tctcaaggaa ttaccactga atatttaact gccatgctgc cctcttccca 2460
gaggccaaaa ggcaaccaca ccaaggattt tttgacttat aaattaacta aagagcaaat 2520
tgcttcaaaa tatggaattc ccataaatac cacaccattt tgcttctccc tttataaaga 2580
catcattaac atgcccgctg gacctgtgat ttgggctttc ttgaaaccta tgttgttggg 2640
aagaattttg catgcaccat ataacccagt cacaaaggca ataatggaaa agtccaatgt 2700
aactctgaga cagctggcgg aattaagaga aaaatctcaa gagtggatgg ataagtcgcc 2760
acttttcatg aattccttcc atctgttaaa ccaggcaatt ccaatgctcc agaatactct 2820
aaggaaccct tttgtgcaag tttttgtaaa gttctccgtg ggactcgatg ctgttgaact 2880

attgaaacag atagatgaac tcgatattct aagactgaaa ttagagaaca acattgacat 2940

catcgatcag cttaacacac tatcttccct gacagtaaat atttcctctt gtgtattata 3000

tgaccgtatt caggcagcaa aaaccataga tgaaatggag agagaggcta aaaggctcta 3060

caaaagcaac gaactctttg gaagtgttat ttttaagctt ccttctaaca gaagctggca 3120

cagaggctat gactctggaa atgtctttct tcctcctgtc ataaaatata ccatccggat 3180

gagtctcaag accgcacaga ccacaagaag cctaagaacc aagatttggg ctccagggcc 3240

acacaattct ccatcacaca accagatcta tggcagggct tttatttatt tacaggatag 3300

tattgaaaga gcaatcattg aattgcaaac tggaaggaac tcccaggaaa tagcagtcca 3360

ggttcaagca attccttatc cctgcttcat gaaagacaac ttcctaacca gtgtctctta 3420

ttctcttcca attgtgctta tggttgcctg ggttgtattt atagctgcct ttgtaaaaaa 3480

gcttgtctat gagaaagacc tccggcttca tgagtacatg aagatgatgg gtgtgaactc 3540

ctgcagccat ttctttgcct ggcttataga gagtgttgga tttttactgg ttaccatcgt 3600

gatcctcatc attatactca agtttggcaa tattcttcct aaaacaaatg ggttcatttt 3660

gttcctgtat ttttcggact acagcttctc ggttattgcc atgagctatc ttatcagtgt 3720

cttcttcaac aacaccaaca ttgcagctct gatcggaagc ctcatctaca tcattgcctt 3780

ctttccattt attgttctgg ttacagtgga gaatgagttg agctatgtat tgaaagtgtt 3840

catgagcctg ctgtccccaa cagcattcag ctatgcaagc caatacattg cacgatacga 3900

agaacagggc attggtcttc agtgggaaaa tatgtacacc tccccggttc aggatgacac 3960

cacctcattt ggctggctgt gctgtctaat cctagctgac tctttcattt atttccttat 4020

tgcttggtat gtcaggaatg tcttcccagg gacatacggt atggcagctc cctggtattt 4080

tccaattctt ccttcctatt ggaaggagcg atttgggtgt gcagaggtga agcctgagaa 4140

gagcaatggc ctcatgttta ctaacatcat gatgcagaac accaacccat ctgccagtcc 4200

tgaatacatg ttttcctcta acatcgagcc tgaacctaaa gatctcacag tcggggttgc 4260

cctgcatggg gtcacaaaga tctatggctc aaaagttgct gttgataacc tcaatctgaa 4320

cttttatgaa gggcatatta cttcattgct ggggcccaat ggagctggga aaactactac 4380

catttccatg ttaactgggc tgtttggggc ctcagcaggc accatttttg tatatggaaa 4440

agatatcaaa acagacctac acacggtacg gaagaacatg ggagtctgta tgcagcacga 4500

cgtcttgttc agttacctca ctactaagga gcaccttctc ctatatggtt ccatcaaagt 4560

tcctcactgg actaaaaagc agctccacga ggaagtaaaa aggactttaa aagatactgg 4620

actatatagc catcgtcata agagagttgg aacactgtca ggaggcatga agaggaagtt 4680

atctatatcc atagctctca ttggtggatc aagggtagta attttggatg aaccatctac 4740

tggagttgac ccatgttctc gccgaagtat atgggatgtt atatccaaga acaaaactgc 4800

cagaacaatc attctgtcaa cgcaccactt ggacgaggct gaagtgctga gtgaccgcat 4860

cgccttcctg gagcagggtg ggcttaggtg ctgtgggtcc ccattttacc tcaaggaagc 4920

ctttggcgat gggtatcacc tcacgcttac caagaagaag gtctttctga acttgaccaa 4980

agagtcacaa aaaaatagtg ctatgagtct tgagcactta acacaaaaga aaattgggaa 5040

ttccaatgcc aatggcatct caactcctga cgatttatct gtgagcagca gcaatttcac 5100

agacagagat gacaaaatcc tgacaagagg agagaggctg gatggctttg gactgttgct 5160

gaagaagatc atggctatac tcatcaagag gttccaccac gcccgcagga actggaaagg 5220

tctcattgct caggttatcc tccccatcgt ctttgttacc actgccatgg gccttggcac 5280

actgagaaat tccagcaaca gttatccaga gattcagatc tccccctctc tttatggtac 5340

ctccgracag acagccttct atgctaatta tcacccgagc acggaagcac ttgtctcagc 5400

aatgtgggac ttccctggaa ttgacaacat gtgtctgaac accagtgatc tacagtgttt 5460

aaacaaagac agtctggaaa aatggaacac cagtggagaa cccatcacta attttggtgt 5520

ttgctcctgc tcagaaaatg tccaggaatg tcctaaattt aactattccc caccgcacag 5580

aagaacttac tcatcccagg taatttataa cctcactggg caacgagtgg aaaattatct 5640

tatatcaact gcaaatgagt ttgtccaaaa aagatatgga ggttggagtt ttgggctgcc 5700

tttgacaaaa gaccttcgtt ttgatataac aggagtccct gccaatagaa cacttgccaa 5760

ggtatggtat gatccagaag gctatcactc ccttccagct tacctcaaca gcctgaataa 5820

tttccttctg cgagttaaca tgtcaaaata cgatgctgcc cgacatggca tcatcatgta 5880

tagccatcct tatccaggag tgcaagacca agaacaagcc acaatcagca gtttaatcga 5940

tattttagtg gcactgtcta tcttgatggg ctactctgtc accaccgcca gctttgtcac 6000

ctatgttgta agggaacatc aaaccaaagc caaacagttg cagcacattt caggcattgg 6060

cgtgacatgc tactgggtaa caaacttcat ttatgacatg gttttctact tggtgcctgt 6120

agcgttttca attggtatca ttgcgatttt caaattacct gcattctaca gtgaaaacaa 6180

cctaggcgct gtatctctcc tacttctcct gtttgggcat gcaacatttt cctggatgta 6240

cttgctggct gggctcttcc atgaaacagg aatggccttc atcacttacg tctgtgtcaa 6300

cttgtttttt ggcattaatt ccattgtttc cctgtcagtg gtatactttc tttccaagga 6360

aaagcctaat gatccgactt tagaacttat ttctgaaacc ctcaagcgca ttttcctgat 6420

tttcccacaa ttctgttttg gctacggttt gattgaactt tctcaacaac agtcggtcct 6480

agacttctta aaagcatatg gagtggaata cccaaatgaa acctttgaga tgaataaact 6540

aggtgcaatg tttgtggctt tggtttctca gggcaccatg tttttttcct tgcgactctt 6600

aatcaacgaa tccctgataa agaaactcag gcttttcttc agaaaattta attcttcaca 6660

tgtaagggag acaatagatg aggatgaaga tgtgcgggct gagagattaa gagttgagag 6720

tggtgcagct gaatttgact tggtccaact ttattgtctc acaaagacct accaacttat 6780
ccacaaaaag attatagctg taaacaacat cagcatcggg atacctgctg gagagtgttt 6840
tgggcttctt ggagtgaatg gagcaggaaa gaccactata ttcaagatgc tgacaggaga 6900
catcattcct tcaagtggaa acattctgat cagaaataag accggatctc tgggtcacgt 6960
tgattctcac agctcattag ttggctactg tcctcaggaa gatgccttag atgacctggt 7020
aactgtggaa gaacatttgt atttctatgc cagggtacat ggaattccag aaaaggatat 7080
taaagaaact gttcataaac tccttaggag acttcacctg atgcccttca aggacagagc 7140
tacctctatg tgcagttatg gcacaaaaag aaaattatcc actgcactgg ccttgatagg 7200
gaaaccttcc attctactgc tggatgagcc gagctctggc atggatccga agtcgaaacg 7260
gcacctctgg aagatcattt cagaagaagt acagaacaaa tgttccgtca tcctcacatc 7320
tcacagcatg gaagaatgtg aagctctctg taccaggttg gccattatgg tgaatggaaa 7380
gtttcaatgt attggatctt tgcagcacat aaagagcagg tttggacgag gatttactgt 7440
caaagttcac ttgaagaata acaaagtgac catggagacc ctcacaaagt tcatgcagct 7500
gcactttcca aaaacatact taaaagatca gcacctcagc atgctagagt atcatgtacc 7560
agtcacagca ggaggagtcg caaacatttt tgatctgctg gaaaccaaca agactgcttt 7620
aaatattaca aatttcttag tgagtcagac cactctggaa gaggttttca tcaactttgc 7680
caaagaccag aagtcctatg aaactgctga taccagcagc caaggttcca ctataagtgt 7740
tgactcacaa gatgaccaga tggagtctta acacttccag caaactcaat ctcagcgtgt 7800
gaccaatggc ttcattttga agaaaagcca cagaagatac acttccgcaa gatatcttca 7860
ttttaaagta aagtaatata ctgtatggaa agttacaact gtgttagact aacaagtaat 7920
tataaaagga aatttttcct tctaaggtca gtgagtgttg ttgctactga aatgaattcc 7980
tgtatactca acactgtgag catgctaatg tatatgctgg tgattcttat gcaaaggtga 8040
agccacctca agatgaatat cttaatttat tactttcaat aaaaagacag tttaaaaggc 8100
aaaaaaaaaa aaa 8113

<210> 5
<211> 2595
<212> PRT
<213> Homo sapiens

<220>
<221> Xaa
<222> (1)..(2595)

<223> Xaa = any amino acid

<400> 5

Met Ala Ser Leu Phe His Gln Leu Gln Ile Leu Val Trp Lys Asn Trp
1   5   10   15

Leu Gly Val Lys Arg Gln Pro Leu Trp Thr Leu Val Leu Ile Leu Trp
            20   25   30

Pro Val Ile Ile Phe Ile Ile Leu Ala Ile Thr Arg Thr Lys Phe Pro
        35   40   45

Pro Thr Ala Lys Pro Thr Cys Tyr Leu Ala Pro Arg Asn Leu Pro Ser
    50   55   60

Thr Gly Phe Phe Pro Phe Leu Gln Thr Leu Leu Cys Asp Thr Asp Ser
65   70   75   80

Lys Cys Lys Asp Thr Pro Tyr Gly Pro Gln Asp Leu Leu Arg Arg Lys
                85   90   95

Gly Ile Asp Asp Ala Leu Phe Lys Asp Ser Glu Ile Leu Arg Lys Ser
            100   105   110

Ser Asn Leu Asp Lys Asp Ser Ser Leu Ser Phe Gln Ser Thr Gln Val
        115   120   125

Pro Glu Arg Arg His Ala Ser Leu Ala Thr Val Phe Pro Ser Pro Ser
    130   135   140

Ser Asp Leu Glu Ile Pro Gly Thr Tyr Thr Phe Asn Gly Ser Gln Val
145   150   155   160

Leu Ala Arg Ile Leu Gly Leu Glu Lys Leu Leu Lys Gln Asn Ser Thr
                165   170   175

Ser Glu Asp Ile Arg Arg Glu Leu Cys Asp Ser Tyr Ser Gly Tyr Ile
            180   185   190

Val Asp Asp Ala Phe Ser Trp Thr Phe Leu Gly Arg Asn Val Phe Asn
        195   200   205

Lys Phe Cys Leu Ser Asn Met Thr Leu Leu Glu Ser Ser Leu Gln Glu
    210   215   220

Leu Asn Lys Gln Phe Ser Gln Leu Ser Ser Asp Pro Asn Asn Gln Lys
225   230   235   240

Ile Val Phe Gln Glu Ile Val Arg Met Leu Ser Phe Phe Ser Gln Val
                245   250   255

Gln Glu Gln Lys Ala Val Trp Gln Leu Leu Ser Ser Phe Pro Asn Val
            260   265   270

Phe Gln Asn Asp Thr Ser Leu Ser Asn Leu Phe Asp Val Leu Arg Lys
        275   280   285

Ala Asn Ser Val Leu Leu Val Val Gln Lys Val Tyr Pro Arg Phe Ala
    290   295   300

Thr Asn Glu Gly Phe Arg Thr Leu Gln Lys Ser Val Lys His Leu Leu
305 310 315 320

Tyr Thr Leu Asp Ser Pro Ala Gln Gly Asp Ser Asp Asn Ile Thr His
325 330 335

Val Trp Asn Glu Asp Asp Gly Gln Thr Leu Ser Pro Ser Ser Leu Ala
340 345 350

Ala Gln Leu Leu Ile Leu Glu Asn Phe Glu Asp Ala Leu Leu Asn Ile
355 360 365

Ser Ala Asn Ser Pro Tyr Ile Pro Tyr Leu Ala Cys Val Arg Asn Val
370 375 380

Thr Asp Ser Leu Ala Arg Gly Ser Pro Glu Asn Leu Arg Leu Leu Gln
385 390 395 400

Ser Thr Ile Arg Phe Lys Lys Ser Phe Leu Arg Asn Gly Ser Tyr Glu
405 410 415

Asp Tyr Phe Pro Pro Val Pro Glu Val Leu Lys Ser Lys Leu Ser Gln
420 425 430

Leu Arg Asn Leu Thr Glu Leu Leu Cys Glu Ser Glu Thr Phe Ser Leu
435 440 445

Ile Glu Lys Ser Cys Gln Leu Ser Asp Met Ser Phe Gly Ser Leu Cys
450 455 460

Glu Glu Ser Glu Phe Asp Leu Gln Leu Leu Glu Ala Ala Glu Leu Gly
465 470 475 480

Thr Glu Ile Ala Ala Ser Leu Leu Tyr His Asp Asn Val Ile Ser Lys
485 490 495

Lys Val Arg Asp Leu Leu Thr Gly Asp Pro Ser Lys Ile Asn Leu Asn
500 505 510

Met Asp Gln Phe Leu Glu Gln Ala Leu Gln Met Asn Tyr Leu Glu Asn
515 520 525

Ile Thr Gln Leu Ile Pro Ile Ile Glu Ala Met Leu His Val Asn Asn
530 535 540

Ser Ala Asp Ala Ser Glu Lys Pro Gly Gln Leu Leu Glu Met Phe Lys
545 550 555 560

Asn Val Glu Glu Leu Lys Glu Asp Leu Arg Arg Thr Thr Gly Met Ser
565 570 575

Asn Arg Thr Ile Asp Lys Leu Leu Ala Ile Pro Ile Pro Asp Asn Arg
580 585 590

Ala Glu Ile Ile Ser Gln Val Phe Trp Leu His Ser Cys Asp Thr Asn
595 600 605

Ile Thr Thr Pro Lys Leu Glu Asp Ala Met Lys Glu Phe Cys Asn Leu
610 615 620

Ser Leu Ser Glu Arg Ser Arg Gln Ser Tyr Leu Ile Gly Leu Thr Leu
625 630 635 640

Leu His Tyr Leu Asn Ile Tyr Asn Phe Thr Asp Lys Val Phe Phe Pro

645 650 655

Arg Lys Asp Gln Lys Pro Val Glu Lys Met Met Glu Leu Phe Ile Arg
660 665 670

Leu Lys Glu Ile Leu Asn Gln Met Ala Ser Gly Thr His Pro Leu Leu
675 680 685

Asp Lys Met Arg Ser Leu Lys Gln Met His Leu Pro Arg Ser Val Pro
690 695 700

Leu Thr Gln Ala Met Tyr Arg Ser Asn Arg Met Asn Thr Pro Gln Gly
705 710 715 720

Ser Phe Ser Thr Ile Ser Gln Ala Leu Cys Ser Gln Gly Ile Thr Thr
725 730 735

Glu Tyr Leu Thr Ala Met Leu Pro Ser Ser Gln Arg Pro Lys Gly Asn
740 745 750

His Thr Lys Asp Phe Leu Thr Tyr Lys Leu Thr Lys Glu Gln Ile Ala
755 760 765

Ser Lys Tyr Gly Ile Pro Ile Asn Thr Thr Pro Phe Cys Phe Ser Leu
770 775 780

Tyr Lys Asp Ile Ile Asn Met Pro Ala Gly Pro Val Ile Trp Ala Phe
785 790 795 800

Leu Lys Pro Met Leu Leu Gly Arg Ile Leu His Ala Pro Tyr Asn Pro
805 810 815

Val Thr Lys Ala Ile Met Glu Lys Ser Asn Val Thr Leu Arg Gln Leu
820 825 830

Ala Glu Leu Arg Glu Lys Ser Gln Glu Trp Met Asp Lys Ser Pro Leu
835 840 845

Phe Met Asn Ser Phe His Leu Leu Asn Gln Ala Ile Pro Met Leu Gln
850 855 860

Asn Thr Leu Arg Asn Pro Phe Val Gln Val Phe Val Lys Phe Ser Val
865 870 875 880

Gly Leu Asp Ala Val Glu Leu Leu Lys Gln Ile Asp Glu Leu Asp Ile
885 890 895

Leu Arg Leu Lys Leu Glu Asn Asn Ile Asp Ile Ile Asp Gln Leu Asn
900 905 910

Thr Leu Ser Ser Leu Thr Val Asn Ile Ser Ser Cys Val Leu Tyr Asp
915 920 925

Arg Ile Gln Ala Ala Lys Thr Ile Asp Glu Met Glu Arg Glu Ala Lys
930 935 940

Arg Leu Tyr Lys Ser Asn Glu Leu Phe Gly Ser Val Ile Phe Lys Leu
945 950 955 960

Pro Ser Asn Arg Ser Trp His Arg Gly Tyr Asp Ser Gly Asn Val Phe
965 970 975

Leu Pro Pro Val Ile Lys Tyr Thr Ile Arg Met Ser Leu Lys Thr Ala
980 985 990

Gln Thr Thr Arg Ser Leu Arg Thr Lys Ile Trp Ala Pro Gly Pro His
995 1000 1005

Asn Ser Pro Ser His Asn Gln Ile Tyr Gly Arg Ala Phe Ile Tyr
1010 1015 1020

Leu Gln Asp Ser Ile Glu Arg Ala Ile Ile Glu Leu Gln Thr Gly
1025 1030 1035

Arg Asn Ser Gln Glu Ile Ala Val Gln Val Gln Ala Ile Pro Tyr
1040 1045 1050

Pro Cys Phe Met Lys Asp Asn Phe Leu Thr Ser Val Ser Tyr Ser
1055 1060 1065

Leu Pro Ile Val Leu Met Val Ala Trp Val Val Phe Ile Ala Ala
1070 1075 1080

Phe Val Lys Lys Leu Val Tyr Glu Lys Asp Leu Arg Leu His Glu
1085 1090 1095

Tyr Met Lys Met Met Gly Val Asn Ser Cys Ser His Phe Phe Ala
1100 1105 1110

Trp Leu Ile Glu Ser Val Gly Phe Leu Leu Val Thr Ile Val Ile
1115 1120 1125

Leu Ile Ile Ile Leu Lys Phe Gly Asn Ile Leu Pro Lys Thr Asn
1130 1135 1140

Gly Phe Ile Leu Phe Leu Tyr Phe Ser Asp Tyr Ser Phe Ser Val
1145 1150 1155

Ile Ala Met Ser Tyr Leu Ile Ser Val Phe Phe Asn Asn Thr Asn
1160 1165 1170

Ile Ala Ala Leu Ile Gly Ser Leu Ile Tyr Ile Ile Ala Phe Phe
1175 1180 1185

Pro Phe Ile Val Leu Val Thr Val Glu Asn Glu Leu Ser Tyr Val
1190 1195 1200

Leu Lys Val Phe Met Ser Leu Leu Ser Pro Thr Ala Phe Ser Tyr
1205 1210 1215

Ala Ser Gln Tyr Ile Ala Arg Tyr Glu Glu Gln Gly Ile Gly Leu
1220 1225 1230

Gln Trp Glu Asn Met Tyr Thr Ser Pro Val Gln Asp Asp Thr Thr
1235 1240 1245

Ser Phe Gly Trp Leu Cys Cys Leu Ile Leu Ala Asp Ser Phe Ile
1250 1255 1260

Tyr Phe Leu Ile Ala Trp Tyr Val Arg Asn Val Phe Pro Gly Thr
1265 1270 1275

Tyr Gly Met Ala Ala Pro Trp Tyr Phe Pro Ile Leu Pro Ser Tyr
1280 1285 1290

Trp Lys Glu Arg Phe Gly Cys Ala Glu Val Lys Pro Glu Lys Ser
1295 1300 1305

Asn Gly Leu Met Phe Thr Asn Ile Met Met Gln Asn Thr Asn Pro
1310 1315 1320

Ser Ala Ser Pro Glu Tyr Met Phe Ser Ser Asn Ile Glu Pro Glu
1325 1330 1335

Pro Lys Asp Leu Thr Val Gly Val Ala Leu His Gly Val Thr Lys
1340 1345 1350

Ile Tyr Gly Ser Lys Val Ala Val Asp Asn Leu Asn Leu Asn Phe
1355 1360 1365

Tyr Glu Gly His Ile Thr Ser Leu Leu Gly Pro Asn Gly Ala Gly
1370 1375 1380

Lys Thr Thr Thr Ile Ser Met Leu Thr Gly Leu Phe Gly Ala Ser
1385 1390 1395

Ala Gly Thr Ile Phe Val Tyr Gly Lys Asp Ile Lys Thr Asp Leu
1400 1405 1410

His Thr Val Arg Lys Asn Met Gly Val Cys Met Gln His Asp Val
1415 1420 1425

Leu Phe Ser Tyr Leu Thr Thr Lys Glu His Leu Leu Leu Tyr Gly
1430 1435 1440

Ser Ile Lys Val Pro His Trp Thr Lys Lys Gln Leu His Glu Glu
1445 1450 1455

Val Lys Arg Thr Leu Lys Asp Thr Gly Leu Tyr Ser His Arg His
1460 1465 1470

Lys Arg Val Gly Thr Leu Ser Gly Gly Met Lys Arg Lys Leu Ser
1475 1480 1485

Ile Ser Ile Ala Leu Ile Gly Gly Ser Arg Val Val Ile Leu Asp
1490 1495 1500

Glu Pro Ser Thr Gly Val Asp Pro Cys Ser Arg Arg Ser Ile Trp
1505 1510 1515

Asp Val Ile Ser Lys Asn Lys Thr Ala Arg Thr Ile Ile Leu Ser
1520 1525 1530

Thr His His Leu Asp Glu Ala Glu Val Leu Ser Asp Arg Ile Ala
1535 1540 1545

Phe Leu Glu Gln Gly Gly Leu Arg Cys Cys Gly Ser Pro Phe Tyr
1550 1555 1560

Leu Lys Glu Ala Phe Gly Asp Gly Tyr His Leu Thr Leu Thr Lys
1565 1570 1575

Lys Lys Ser Pro Asn Leu Asn Ala Asn Ala Val Cys Asp Thr Met
1580 1585 1590

Ala Val Thr Ala Met Ile Gln Ser His Leu Pro Glu Ala Tyr Leu
1595 1600 1605

Lys Glu Asp Ile Gly Gly Glu Leu Val Tyr Val Leu Pro Pro Phe
1610 1615 1620

Ser Thr Lys Val Ser Gly Ala Tyr Leu Ser Leu Leu Arg Ala Leu

1625 1630 1635

Asp Asn Gly Met Gly Asp Leu Asn Ile Gly Cys Tyr Gly Ile Ser
1640 1645 1650

Asp Thr Thr Val Glu Glu Val Phe Leu Asn Leu Thr Lys Glu Ser
1655 1660 1665

Gln Lys Asn Ser Ala Met Ser Leu Glu His Leu Thr Gln Lys Lys
1670 1675 1680

Ile Gly Asn Ser Asn Ala Asn Gly Ile Ser Thr Pro Asp Asp Leu
1685 1690 1695

Ser Val Ser Ser Ser Asn Phe Thr Asp Arg Asp Asp Lys Ile Leu
1700 1705 1710

Thr Arg Gly Glu Arg Leu Asp Gly Phe Gly Leu Leu Leu Lys Lys
1715 1720 1725

Ile Met Ala Ile Leu Ile Lys Arg Phe His His Xaa Arg Arg Asn
1730 1735 1740

Trp Lys Gly Leu Ile Ala Gln Val Ile Leu Pro Ile Val Phe Val
1745 1750 1755

Thr Thr Ala Met Gly Leu Gly Thr Leu Arg Asn Ser Ser Asn Ser
1760 1765 1770

Tyr Pro Glu Ile Gln Ile Ser Pro Ser Leu Tyr Gly Thr Ser Glu
1775 1780 1785

Gln Thr Ala Phe Tyr Ala Asn Tyr His Pro Ser Thr Glu Ala Leu
1790 1795 1800

Val Ser Ala Met Trp Asp Phe Pro Gly Ile Asp Asn Met Cys Leu
1805 1810 1815

Asn Thr Ser Asp Leu Gln Cys Leu Asn Lys Asp Ser Leu Glu Lys
1820 1825 1830

Trp Asn Thr Ser Gly Glu Pro Ile Thr Asn Phe Gly Val Cys Ser
1835 1840 1845

Cys Ser Glu Asn Val Gln Glu Cys Pro Lys Phe Asn Tyr Ser Pro
1850 1855 1860

Pro His Arg Arg Thr Tyr Ser Ser Gln Val Ile Tyr Asn Leu Thr
1865 1870 1875

Gly Gln Arg Val Glu Asn Tyr Leu Ile Ser Thr Ala Asn Glu Phe
1880 1885 1890

Val Gln Lys Arg Tyr Gly Gly Trp Ser Phe Gly Leu Pro Leu Thr
1895 1900 1905

Lys Asp Leu Arg Phe Asp Ile Thr Gly Val Pro Ala Asn Arg Thr
1910 1915 1920

Leu Ala Lys Val Trp Tyr Asp Pro Glu Gly Tyr His Ser Leu Pro
1925 1930 1935

Ala Tyr Leu Asn Ser Leu Asn Asn Phe Leu Leu Arg Val Asn Met
1940 1945 1950

Ser Lys Tyr Asp Ala Ala Arg His Gly Ile Ile Met Tyr Ser His
1955 1960 1965

Pro Tyr Pro Gly Val Gln Asp Gln Glu Gln Ala Thr Ile Ser Ser
1970 1975 1980

Leu Ile Asp Ile Leu Val Ala Leu Ser Ile Leu Met Gly Tyr Ser
1985 1990 1995

Val Thr Thr Ala Ser Phe Val Thr Tyr Val Val Arg Glu His Gln
2000 2005 2010

Thr Lys Ala Lys Gln Leu Gln His Ile Ser Gly Ile Gly Val Thr
2015 2020 2025

Cys Tyr Trp Val Thr Asn Phe Ile Tyr Asp Met Val Phe Tyr Leu
2030 2035 2040

Val Pro Val Ala Phe Ser Ile Gly Ile Ile Ala Ile Phe Lys Leu
2045 2050 2055

Pro Ala Phe Tyr Ser Glu Asn Asn Leu Gly Ala Val Ser Leu Leu
2060 2065 2070

Leu Leu Leu Phe Gly His Ala Thr Phe Ser Trp Met Tyr Leu Leu
2075 2080 2085

Ala Gly Leu Phe His Glu Thr Gly Met Ala Phe Ile Thr Tyr Val
2090 2095 2100

Cys Val Asn Leu Phe Phe Gly Ile Asn Ser Ile Val Ser Leu Ser
2105 2110 2115

Val Val Tyr Phe Leu Ser Lys Glu Lys Pro Asn Asp Pro Thr Leu
2120 2125 2130

Glu Leu Ile Ser Glu Thr Leu Lys Arg Ile Phe Leu Ile Phe Pro
2135 2140 2145

Gln Phe Cys Phe Gly Tyr Gly Leu Ile Glu Leu Ser Gln Gln Gln
2150 2155 2160

Ser Val Leu Asp Phe Leu Lys Ala Tyr Gly Val Glu Tyr Pro Asn
2165 2170 2175

Glu Thr Phe Glu Met Asn Lys Leu Gly Ala Met Phe Val Ala Leu
2180 2185 2190

Val Ser Gln Gly Thr Met Phe Phe Ser Leu Arg Leu Leu Ile Asn
2195 2200 2205

Glu Ser Leu Ile Lys Lys Leu Arg Leu Phe Phe Arg Lys Phe Asn
2210 2215 2220

Ser Ser His Val Arg Glu Thr Ile Asp Glu Asp Glu Asp Val Arg
2225 2230 2235

Ala Glu Arg Leu Arg Val Glu Ser Gly Ala Ala Glu Phe Asp Leu
2240 2245 2250

Val Gln Leu Tyr Cys Leu Thr Lys Thr Tyr Gln Leu Ile His Lys
2255 2260 2265

Lys Ile Ile Ala Val Asn Asn Ile Ser Ile Gly Ile Pro Ala Gly
2270 2275 2280

Glu Cys Phe Gly Leu Leu Gly Val Asn Gly Ala Gly Lys Thr Thr
2285 2290 2295

Ile Phe Lys Met Leu Thr Gly Asp Ile Ile Pro Ser Ser Gly Asn
2300 2305 2310

Ile Leu Ile Arg Asn Lys Thr Gly Ser Leu Gly His Val Asp Ser
2315 2320 2325

His Ser Ser Leu Val Gly Tyr Cys Pro Gln Glu Asp Ala Leu Asp
2330 2335 2340

Asp Leu Val Thr Val Glu Glu His Leu Tyr Phe Tyr Ala Arg Val
2345 2350 2355

His Gly Ile Pro Glu Lys Asp Ile Lys Glu Thr Val His Lys Leu
2360 2365 2370

Leu Arg Arg Leu His Leu Met Pro Phe Lys Asp Arg Ala Thr Ser
2375 2380 2385

Met Cys Ser Tyr Gly Thr Lys Arg Lys Leu Ser Thr Ala Leu Ala
2390 2395 2400

Leu Ile Gly Lys Pro Ser Ile Leu Leu Leu Asp Glu Pro Ser Ser
2405 2410 2415

Gly Met Asp Pro Lys Ser Lys Arg His Leu Trp Lys Ile Ile Ser
2420 2425 2430

Glu Glu Val Gln Asn Lys Cys Ser Val Ile Leu Thr Ser His Ser
2435 2440 2445

Met Glu Glu Cys Glu Ala Leu Cys Thr Arg Leu Ala Ile Met Val
2450 2455 2460

Asn Gly Lys Phe Gln Cys Ile Gly Ser Leu Gln His Ile Lys Ser
2465 2470 2475

Arg Phe Gly Arg Gly Phe Thr Val Lys Val His Leu Lys Asn Asn
2480 2485 2490

Lys Val Thr Met Glu Thr Leu Thr Lys Phe Met Gln Leu His Phe
2495 2500 2505

Pro Lys Thr Tyr Leu Lys Asp Gln His Leu Ser Met Leu Glu Tyr
2510 2515 2520

His Val Pro Val Thr Ala Gly Gly Val Ala Asn Ile Phe Asp Leu
2525 2530 2535

Leu Glu Thr Asn Lys Thr Ala Leu Asn Ile Thr Asn Phe Leu Val
2540 2545 2550

Ser Gln Thr Thr Leu Glu Glu Val Phe Ile Asn Phe Ala Lys Asp
2555 2560 2565

Gln Lys Ser Tyr Glu Thr Ala Asp Thr Ser Ser Gln Gly Ser Thr
2570 2575 2580

Ile Ser Val Asp Ser Gln Asp Asp Gln Met Glu Ser

2585 2590 2595

<210> 6

<211> 2516

<212> PRT

<213> Homo sapiens

<220>

<221> Xaa

<222> (1)..(2516)

<223> Xaa = any amino acid

<400> 6

Met Ala Ser Leu Phe His Gln Leu Gln Ile Leu Val Trp Lys Asn Trp
1 5 10 15

Leu Gly Val Lys Arg Gln Pro Leu Trp Thr Leu Val Leu Ile Leu Trp
20 25 30

Pro Val Ile Ile Phe Ile Ile Leu Ala Ile Thr Arg Thr Lys Phe Pro
35 40 45

Pro Thr Ala Lys Pro Thr Cys Tyr Leu Ala Pro Arg Asn Leu Pro Ser
50 55 60

Thr Gly Phe Phe Pro Phe Leu Gln Thr Leu Leu Cys Asp Thr Asp Ser
65 70 75 80

Lys Cys Lys Asp Thr Pro Tyr Gly Pro Gln Asp Leu Leu Arg Arg Lys
85 90 95

Gly Ile Asp Asp Ala Leu Phe Lys Asp Ser Glu Ile Leu Arg Lys Ser
100 105 110

Ser Asn Leu Asp Lys Asp Ser Ser Leu Ser Phe Gln Ser Thr Gln Val
115 120 125

Pro Glu Arg Arg His Ala Ser Leu Ala Thr Val Phe Pro Ser Pro Ser
130 135 140

Ser Asp Leu Glu Ile Pro Gly Thr Tyr Thr Phe Asn Gly Ser Gln Val
145 150 155 160

Leu Ala Arg Ile Leu Gly Leu Glu Lys Leu Leu Lys Gln Asn Ser Thr
165 170 175

Ser Glu Asp Ile Arg Arg Glu Leu Cys Asp Ser Tyr Ser Gly Tyr Ile
180 185 190

Val Asp Asp Ala Phe Ser Trp Thr Phe Leu Gly Arg Asn Val Phe Asn
195 200 205

Lys Phe Cys Leu Ser Asn Met Thr Leu Leu Glu Ser Ser Leu Gln Glu

210 215 220

Leu Asn Lys Gln Phe Ser Gln Leu Ser Ser Asp Pro Asn Asn Gln Lys
225 230 235 240

Ile Val Phe Gln Glu Ile Val Arg Met Leu Ser Phe Phe Ser Gln Val
245 250 255

Gln Glu Gln Lys Ala Val Trp Gln Leu Leu Ser Ser Phe Pro Asn Val
260 265 270

Phe Gln Asn Asp Thr Ser Leu Ser Asn Leu Phe Asp Val Leu Arg Lys
275 280 285

Ala Asn Ser Val Leu Leu Val Val Gln Lys Val Tyr Pro Arg Phe Ala
290 295 300

Thr Asn Glu Gly Phe Arg Thr Leu Gln Lys Ser Val Lys His Leu Leu
305 310 315 320

Tyr Thr Leu Asp Ser Pro Ala Gln Gly Asp Ser Asp Asn Ile Thr His
325 330 335

Val Trp Asn Glu Asp Asp Gly Gln Thr Leu Ser Pro Ser Ser Leu Ala
340 345 350

Ala Gln Leu Leu Ile Leu Glu Asn Phe Glu Asp Ala Leu Leu Asn Ile
355 360 365

Ser Ala Asn Ser Pro Tyr Ile Pro Tyr Leu Ala Cys Val Arg Asn Val
370 375 380

Thr Asp Ser Leu Ala Arg Gly Ser Pro Glu Asn Leu Arg Leu Leu Gln
385 390 395 400

Ser Thr Ile Arg Phe Lys Lys Ser Phe Leu Arg Asn Gly Ser Tyr Glu
405 410 415

Asp Tyr Phe Pro Pro Val Pro Glu Val Leu Lys Ser Lys Leu Ser Gln
420 425 430

Leu Arg Asn Leu Thr Glu Leu Leu Cys Glu Ser Glu Thr Phe Ser Leu
435 440 445

Ile Glu Lys Ser Cys Gln Leu Ser Asp Met Ser Phe Gly Ser Leu Cys
450 455 460

Glu Glu Ser Glu Phe Asp Leu Gln Leu Leu Glu Ala Ala Glu Leu Gly
465 470 475 480

Thr Glu Ile Ala Ala Ser Leu Leu Tyr His Asp Asn Val Ile Ser Lys
485 490 495

Lys Val Arg Asp Leu Leu Thr Gly Asp Pro Ser Lys Ile Asn Leu Asn
500 505 510

Met Asp Gln Phe Leu Glu Gln Ala Leu Gln Met Asn Tyr Leu Glu Asn
515 520 525

Ile Thr Gln Leu Ile Pro Ile Ile Glu Ala Met Leu His Val Asn Asn
530 535 540

Ser Ala Asp Ala Ser Glu Lys Pro Gly Gln Leu Leu Glu Met Phe Lys
545 550 555 560

Asn Val Glu Glu Leu Lys Glu Asp Leu Arg Arg Thr Thr Gly Met Ser
565 570 575

Asn Arg Thr Ile Asp Lys Leu Leu Ala Ile Pro Ile Pro Asp Asn Arg
580 585 590

Ala Glu Ile Ile Ser Gln Val Phe Trp Leu His Ser Cys Asp Thr Asn
595 600 605

Ile Thr Thr Pro Lys Leu Glu Asp Ala Met Lys Glu Phe Cys Asn Leu
610 615 620

Ser Leu Ser Glu Arg Ser Arg Gln Ser Tyr Leu Ile Gly Leu Thr Leu
625 630 635 640

Leu His Tyr Leu Asn Ile Tyr Asn Phe Thr Asp Lys Val Phe Phe Pro
645 650 655

Arg Lys Asp Gln Lys Pro Val Glu Lys Met Met Glu Leu Phe Ile Arg
660 665 670

Leu Lys Glu Ile Leu Asn Gln Met Ala Ser Gly Thr His Pro Leu Leu
675 680 685

Asp Lys Met Arg Ser Leu Lys Gln Met His Leu Pro Arg Ser Val Pro
690 695 700

Leu Thr Gln Ala Met Tyr Arg Ser Asn Arg Met Asn Thr Pro Gln Gly
705 710 715 720

Ser Phe Ser Thr Ile Ser Gln Ala Leu Cys Ser Gln Gly Ile Thr Thr
725 730 735

Glu Tyr Leu Thr Ala Met Leu Pro Ser Ser Gln Arg Pro Lys Gly Asn
740 745 750

His Thr Lys Asp Phe Leu Thr Tyr Lys Leu Thr Lys Glu Gln Ile Ala
755 760 765

Ser Lys Tyr Gly Ile Pro Ile Asn Thr Thr Pro Phe Cys Phe Ser Leu
770 775 780

Tyr Lys Asp Ile Ile Asn Met Pro Ala Gly Pro Val Ile Trp Ala Phe
785 790 795 800

Leu Lys Pro Met Leu Leu Gly Arg Ile Leu His Ala Pro Tyr Asn Pro
805 810 815

Val Thr Lys Ala Ile Met Glu Lys Ser Asn Val Thr Leu Arg Gln Leu
820 825 830

Ala Glu Leu Arg Glu Lys Ser Gln Glu Trp Met Asp Lys Ser Pro Leu
835 840 845

Phe Met Asn Ser Phe His Leu Leu Asn Gln Ala Ile Pro Met Leu Gln
850 855 860

Asn Thr Leu Arg Asn Pro Phe Val Gln Val Phe Val Lys Phe Ser Val
865 870 875 880

Gly Leu Asp Ala Val Glu Leu Leu Lys Gln Ile Asp Glu Leu Asp Ile
885 890 895

Leu Arg Leu Lys Leu Glu Asn Asn Ile Asp Ile Ile Asp Gln Leu Asn
900 905 910

Thr Leu Ser Ser Leu Thr Val Asn Ile Ser Ser Cys Val Leu Tyr Asp
915 920 925

Arg Ile Gln Ala Ala Lys Thr Ile Asp Glu Met Glu Arg Glu Ala Lys
930 935 940

Arg Leu Tyr Lys Ser Asn Glu Leu Phe Gly Ser Val Ile Phe Lys Leu
945 950 955 960

Pro Ser Asn Arg Ser Trp His Arg Gly Tyr Asp Ser Gly Asn Val Phe
965 970 975

Leu Pro Pro Val Ile Lys Tyr Thr Ile Arg Met Ser Leu Lys Thr Ala
980 985 990

Gln Thr Thr Arg Ser Leu Arg Thr Lys Ile Trp Ala Pro Gly Pro His
995 1000 1005

Asn Ser Pro Ser His Asn Gln Ile Tyr Gly Arg Ala Phe Ile Tyr
1010 1015 1020

Leu Gln Asp Ser Ile Glu Arg Ala Ile Ile Glu Leu Gln Thr Gly
1025 1030 1035

Arg Asn Ser Gln Glu Ile Ala Val Gln Val Gln Ala Ile Pro Tyr
1040 1045 1050

Pro Cys Phe Met Lys Asp Asn Phe Leu Thr Ser Val Ser Tyr Ser
1055 1060 1065

Leu Pro Ile Val Leu Met Val Ala Trp Val Val Phe Ile Ala Ala
1070 1075 1080

Phe Val Lys Lys Leu Val Tyr Glu Lys Asp Leu Arg Leu His Glu
1085 1090 1095

Tyr Met Lys Met Met Gly Val Asn Ser Cys Ser His Phe Phe Ala
1100 1105 1110

Trp Leu Ile Glu Ser Val Gly Phe Leu Leu Val Thr Ile Val Ile
1115 1120 1125

Leu Ile Ile Ile Leu Lys Phe Gly Asn Ile Leu Pro Lys Thr Asn
1130 1135 1140

Gly Phe Ile Leu Phe Leu Tyr Phe Ser Asp Tyr Ser Phe Ser Val
1145 1150 1155

Ile Ala Met Ser Tyr Leu Ile Ser Val Phe Phe Asn Asn Thr Asn
1160 1165 1170

Ile Ala Ala Leu Ile Gly Ser Leu Ile Tyr Ile Ile Ala Phe Phe
1175 1180 1185

Pro Phe Ile Val Leu Val Thr Val Glu Asn Glu Leu Ser Tyr Val
1190 1195 1200

Leu Lys Val Phe Met Ser Leu Leu Ser Pro Thr Ala Phe Ser Tyr
1205 1210 1215

Ala Ser Gln Tyr Ile Ala Arg Tyr Glu Glu Gln Gly Ile Gly Leu

1220 1225 1230

Gln Trp Glu Asn Met Tyr Thr Ser Pro Val Gln Asp Asp Thr Thr
1235 1240 1245

Ser Phe Gly Trp Leu Cys Cys Leu Ile Leu Ala Asp Ser Phe Ile
1250 1255 1260

Tyr Phe Leu Ile Ala Trp Tyr Val Arg Asn Val Phe Pro Gly Thr
1265 1270 1275

Tyr Gly Met Ala Ala Pro Trp Tyr Phe Pro Ile Leu Pro Ser Tyr
1280 1285 1290

Trp Lys Glu Arg Phe Gly Cys Ala Glu Val Lys Pro Glu Lys Ser
1295 1300 1305

Asn Gly Leu Met Phe Thr Asn Ile Met Met Gln Asn Thr Asn Pro
1310 1315 1320

Ser Ala Ser Pro Glu Tyr Met Phe Ser Ser Asn Ile Glu Pro Glu
1325 1330 1335

Pro Lys Asp Leu Thr Val Gly Val Ala Leu His Gly Val Thr Lys
1340 1345 1350

Ile Tyr Gly Ser Lys Val Ala Val Asp Asn Leu Asn Leu Asn Phe
1355 1360 1365

Tyr Glu Gly His Ile Thr Ser Leu Leu Gly Pro Asn Gly Ala Gly
1370 1375 1380

Lys Thr Thr Thr Ile Ser Met Leu Thr Gly Leu Phe Gly Ala Ser
1385 1390 1395

Ala Gly Thr Ile Phe Val Tyr Gly Lys Asp Ile Lys Thr Asp Leu
1400 1405 1410

His Thr Val Arg Lys Asn Met Gly Val Cys Met Gln His Asp Val
1415 1420 1425

Leu Phe Ser Tyr Leu Thr Thr Lys Glu His Leu Leu Leu Tyr Gly
1430 1435 1440

Ser Ile Lys Val Pro His Trp Thr Lys Lys Gln Leu His Glu Glu
1445 1450 1455

Val Lys Arg Thr Leu Lys Asp Thr Gly Leu Tyr Ser His Arg His
1460 1465 1470

Lys Arg Val Gly Thr Leu Ser Gly Gly Met Lys Arg Lys Leu Ser
1475 1480 1485

Ile Ser Ile Ala Leu Ile Gly Gly Ser Arg Val Val Ile Leu Asp
1490 1495 1500

Glu Pro Ser Thr Gly Val Asp Pro Cys Ser Arg Arg Ser Ile Trp
1505 1510 1515

Asp Val Ile Ser Lys Asn Lys Thr Ala Arg Thr Ile Ile Leu Ser
1520 1525 1530

Thr His His Leu Asp Glu Ala Glu Val Leu Ser Asp Arg Ile Ala
1535 1540 1545

Phe Leu Glu Gln Gly Gly Leu Arg Cys Cys Gly Ser Pro Phe Tyr
1550 1555 1560

Leu Lys Glu Ala Phe Gly Asp Gly Tyr His Leu Thr Leu Thr Lys
1565 1570 1575

Lys Lys Val Phe Leu Asn Leu Thr Lys Glu Ser Gln Lys Asn Ser
1580 1585 1590

Ala Met Ser Leu Glu His Leu Thr Gln Lys Lys Ile Gly Asn Ser
1595 1600 1605

Asn Ala Asn Gly Ile Ser Thr Pro Asp Asp Leu Ser Val Ser Ser
1610 1615 1620

Ser Asn Phe Thr Asp Arg Asp Asp Lys Ile Leu Thr Arg Gly Glu
1625 1630 1635

Arg Leu Asp Gly Phe Gly Leu Leu Leu Lys Lys Ile Met Ala Ile
1640 1645 1650

Leu Ile Lys Arg Phe His His Ala Arg Arg Asn Trp Lys Gly Leu
1655 1660 1665

Ile Ala Gln Val Ile Leu Pro Ile Val Phe Val Thr Thr Ala Met
1670 1675 1680

Gly Leu Gly Thr Leu Arg Asn Ser Ser Asn Ser Tyr Pro Glu Ile
1685 1690 1695

Gln Ile Ser Pro Ser Leu Tyr Gly Thr Ser Xaa Gln Thr Ala Phe
1700 1705 1710

Tyr Ala Asn Tyr His Pro Ser Thr Glu Ala Leu Val Ser Ala Met
1715 1720 1725

Trp Asp Phe Pro Gly Ile Asp Asn Met Cys Leu Asn Thr Ser Asp
1730 1735 1740

Leu Gln Cys Leu Asn Lys Asp Ser Leu Glu Lys Trp Asn Thr Ser
1745 1750 1755

Gly Glu Pro Ile Thr Asn Phe Gly Val Cys Ser Cys Ser Glu Asn
1760 1765 1770

Val Gln Glu Cys Pro Lys Phe Asn Tyr Ser Pro Pro His Arg Arg
1775 1780 1785

Thr Tyr Ser Ser Gln Val Ile Tyr Asn Leu Thr Gly Gln Arg Val
1790 1795 1800

Glu Asn Tyr Leu Ile Ser Thr Ala Asn Glu Phe Val Gln Lys Arg
1805 1810 1815

Tyr Gly Gly Trp Ser Phe Gly Leu Pro Leu Thr Lys Asp Leu Arg
1820 1825 1830

Phe Asp Ile Thr Gly Val Pro Ala Asn Arg Thr Leu Ala Lys Val
1835 1840 1845

Trp Tyr Asp Pro Glu Gly Tyr His Ser Leu Pro Ala Tyr Leu Asn
1850 1855 1860

Ser Leu Asn Asn Phe Leu Leu Arg Val Asn Met Ser Lys Tyr Asp
1865 1870 1875

Ala Ala Arg His Gly Ile Ile Met Tyr Ser His Pro Tyr Pro Gly
1880 1885 1890

Val Gln Asp Gln Glu Gln Ala Thr Ile Ser Ser Leu Ile Asp Ile
1895 1900 1905

Leu Val Ala Leu Ser Ile Leu Met Gly Tyr Ser Val Thr Thr Ala
1910 1915 1920

Ser Phe Val Thr Tyr Val Val Arg Glu His Gln Thr Lys Ala Lys
1925 1930 1935

Gln Leu Gln His Ile Ser Gly Ile Gly Val Thr Cys Tyr Trp Val
1940 1945 1950

Thr Asn Phe Ile Tyr Asp Met Val Phe Tyr Leu Val Pro Val Ala
1955 1960 1965

Phe Ser Ile Gly Ile Ile Ala Ile Phe Lys Leu Pro Ala Phe Tyr
1970 1975 1980

Ser Glu Asn Asn Leu Gly Ala Val Ser Leu Leu Leu Leu Leu Phe
1985 1990 1995

Gly His Ala Thr Phe Ser Trp Met Tyr Leu Leu Ala Gly Leu Phe
2000 2005 2010

His Glu Thr Gly Met Ala Phe Ile Thr Tyr Val Cys Val Asn Leu
2015 2020 2025

Phe Phe Gly Ile Asn Ser Ile Val Ser Leu Ser Val Val Tyr Phe
2030 2035 2040

Leu Ser Lys Glu Lys Pro Asn Asp Pro Thr Leu Glu Leu Ile Ser
2045 2050 2055

Glu Thr Leu Lys Arg Ile Phe Leu Ile Phe Pro Gln Phe Cys Phe
2060 2065 2070

Gly Tyr Gly Leu Ile Glu Leu Ser Gln Gln Gln Ser Val Leu Asp
2075 2080 2085

Phe Leu Lys Ala Tyr Gly Val Glu Tyr Pro Asn Glu Thr Phe Glu
2090 2095 2100

Met Asn Lys Leu Gly Ala Met Phe Val Ala Leu Val Ser Gln Gly
2105 2110 2115

Thr Met Phe Phe Ser Leu Arg Leu Leu Ile Asn Glu Ser Leu Ile
2120 2125 2130

Lys Lys Leu Arg Leu Phe Phe Arg Lys Phe Asn Ser Ser His Val
2135 2140 2145

Arg Glu Thr Ile Asp Glu Asp Glu Asp Val Arg Ala Glu Arg Leu
2150 2155 2160

Arg Val Glu Ser Gly Ala Ala Glu Phe Asp Leu Val Gln Leu Tyr
2165 2170 2175

Cys Leu Thr Lys Thr Tyr Gln Leu Ile His Lys Lys Ile Ile Ala

2180 2185 2190

Val Asn Asn Ile Ser Ile Gly Ile Pro Ala Gly Glu Cys Phe Gly
2195 2200 2205

Leu Leu Gly Val Asn Gly Ala Gly Lys Thr Thr Ile Phe Lys Met
2210 2215 2220

Leu Thr Gly Asp Ile Ile Pro Ser Ser Gly Asn Ile Leu Ile Arg
2225 2230 2235

Asn Lys Thr Gly Ser Leu Gly His Val Asp Ser His Ser Ser Leu
2240 2245 2250

Val Gly Tyr Cys Pro Gln Glu Asp Ala Leu Asp Asp Leu Val Thr
2255 2260 2265

Val Glu Glu His Leu Tyr Phe Tyr Ala Arg Val His Gly Ile Pro
2270 2275 2280

Glu Lys Asp Ile Lys Glu Thr Val His Lys Leu Leu Arg Arg Leu
2285 2290 2295

His Leu Met Pro Phe Lys Asp Arg Ala Thr Ser Met Cys Ser Tyr
2300 2305 2310

Gly Thr Lys Arg Lys Leu Ser Thr Ala Leu Ala Leu Ile Gly Lys
2315 2320 2325

Pro Ser Ile Leu Leu Leu Asp Glu Pro Ser Ser Gly Met Asp Pro
2330 2335 2340

Lys Ser Lys Arg His Leu Trp Lys Ile Ile Ser Glu Glu Val Gln
2345 2350 2355

Asn Lys Cys Ser Val Ile Leu Thr Ser His Ser Met Glu Glu Cys
2360 2365 2370

Glu Ala Leu Cys Thr Arg Leu Ala Ile Met Val Asn Gly Lys Phe
2375 2380 2385

Gln Cys Ile Gly Ser Leu Gln His Ile Lys Ser Arg Phe Gly Arg
2390 2395 2400

Gly Phe Thr Val Lys Val His Leu Lys Asn Asn Lys Val Thr Met
2405 2410 2415

Glu Thr Leu Thr Lys Phe Met Gln Leu His Phe Pro Lys Thr Tyr
2420 2425 2430

Leu Lys Asp Gln His Leu Ser Met Leu Glu Tyr His Val Pro Val
2435 2440 2445

Thr Ala Gly Gly Val Ala Asn Ile Phe Asp Leu Leu Glu Thr Asn
2450 2455 2460

Lys Thr Ala Leu Asn Ile Thr Asn Phe Leu Val Ser Gln Thr Thr
2465 2470 2475

Leu Glu Glu Val Phe Ile Asn Phe Ala Lys Asp Gln Lys Ser Tyr
2480 2485 2490

Glu Thr Ala Asp Thr Ser Ser Gln Gly Ser Thr Ile Ser Val Asp
2495 2500 2505

Ser Gln Asp Asp Gln Met Glu Ser
2510 2515

<210> 7

<211> 21

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 7
gaagagttga ttgagaagtg c 21

<210> 8

<211> 21

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 8
cgaagagaac tatgtgacag c 21

<210> 9

<211> 20

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 9
cttctcacaa gtgcaagagc 20

<210> 10

<211> 24

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 10
cgcaatggtt cctatgaaga ttac 24

<210> 11

<211> 28

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 11
cagaagggtg agtccgatga ggtaagac 28

<210> 12

<211> 21

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 12
gctgtcacat agttctcttc g 21

<210> 13

<211> 24

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 13
gtaatcttca taggaaccat tgcg 24

<210> 14

<211> 25

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 14
cctacacacg gtacggaaga acatg 25

<210> 15

<211> 27

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 15
gccatcgtca taagagagtt ggaacac 27

<210> 16

<211> 19

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 16
gtgcttatgg ttgcctggg 19

<210> 17

<211> 20

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 17
cttccatctg ttaaaccagg 20

<210> 18

<211> 18

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 18
ggtgttctgg ctgcattc 18

<210> 19

<211> 20

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 19
gcctcatcta catcattgcc 20

<210> 20

<211> 27

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 20
gtgttccaac tctcttatga cgatggc 27

<210> 21

<211> 25

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 21
catgttcttc cgtaccgtgt gtagg 25

<210> 22

<211> 20

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 22
ggcaatgatg tagatgaggc 20

<210> 23

<211> 19

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 23
cccaggcaac cataagcac 19

<210> 24

<211> 30

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 24
cttttctact ggcttttgat ctttcctcgg 30

<210> 25

<211> 19

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 25
ccttgatagg gaaaccttc 19

<210> 26

<211> 20

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 26
caccagcata tacattagca 20

<210> 27

<211> 19

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 27
gaaggtttcc ctatcaagg 19

<210> 28

<211> 27

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 28
gtatcatgta ccagtcacag caggagg 27

<210> 29

<211> 28

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 29
ccaaagacca gaagtcctat gaaactgc 28

<210> 30

<211> 20

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 30
gagtggagaa gaaaagtcag 20

<210> 31

<211> 21

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 31
cacggaacct agattcactc c 21

<210> 32

<211> 18

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 32
cccagagcaa gtgatttc 18

<210> 33

<211> 18

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 33
cgagtgcccg taggagtg 18

<210> 34

<211> 22

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 34
ttgcacctag tttattcatc tc 22

<210> 35

<211> 23

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 35
gtcataaatg aagtttgtta ccc 23

<210> 36

<211> 21

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 36
caacagttat ccagagattc a 21

<210> 37

<211> 19

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 37
gagtccctgc caatagaac 19

<210> 38

<211> 20

<212> DNA

<213> Artificial

<220>

<223> primer

<400> 38
gcaaatgcag tatgtgacac 20